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The Role of Cash in Northern Economies:
A Case Study
of
Four Alaskan Athabascan Villages

by

Priscilla Carvill Wheeler ©

A Thesis Submitted to the Faculty of Graduate Studies and Research in Partial Fulfillment
of the Requirements for the Degree

Doctor of Philosophy

Department of Anthropology

Edmonton, Alberta

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The undersigned certify that they have read, and recommended to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled The Role of Cash in Northern Economies: A Case Study of Four Alaskan Athabascan Villages submitted by Priscilla Carvill Wheeler in partial fulfillment of the requirements for the degree Doctor of Philosophy

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October 1997

For my parents, And for Sarah

ABSTRACT

This study examines contemporary resource use by members of four Athabascan communities in the lower Yukon River region of Alaska. In addition to discussing the substantial wild resource use by members of the four communities, the role of cash is analyzed as one of many resources in the economic system.

The Deg hi'tan and Doy hi'tan Athabascans residing in the four communities of Grayling, Anvik, Shageluk, and Holy Cross rely on a wide variety of fish, game, and cash resources; and the contemporary economies of the four communities are based on a unique combination of wild fish and game and cash resources. I demonstrate that while soundly rooted in and conditioned by their historical precedents, the local economies reflect adaptive and flexible strategies employing combinations of wild fish and game resources and cash obtained from a variety of sources.

The role of cash in traditional or subsistence economies has been an important one in hunter-gatherer studies. Since publication of "Tappers and Trappers: Parallel Processes in Acculturation," (Murphy and Steward 1956), considerable anthropological dialogue has focused on defining and describing the so-called modern hunter-gatherer or forager economy. While theoretical and methodological foci have changed, a consistent theme has been the separation of subsistence and cash sectors of the economy, be it labeled as a dual economy or separate sectors. In this study, I challenge the model which separates the subsistence and cash sectors of the economy, and instead consider cash from the local perspective, as one of many resources. In examining the role of cash in the economic system, I consider emic perceptions of cash. I illustrate that rather than comprising a separate economic system, cash is utilized within the system outside of its capitalist trappings and, as such, it does not entail the introduction, insertion, or dominance of a capitalist mode of production inside the economy.

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While I have recieved help from many sources, and this work is undoubtedly better for it, any mistakes or errors are mine entirely.

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CHAPTER ONE:
Introduction

Cash is the one "resource" not easily come by in the bush (Herscovici 1985: 156).

Study Overview

This study is an examination of contemporary resource use by members of four Athabascan[1] communities in the lower Yukon River region of Alaska. Specifically, I examine the role of cash as one of many resources in the economic system. I demonstrate that rather than comprising a separate system, cash is one of many resources[2] that is both seasonally and variably available. While the infusion of cash is critical to the continued and effective functioning of the economic system, as has been noted in other areas (e.g., Asch 1979b; Ellanna and Balluta 1992; Feit 1994; Fienup-Riordan 1994 [1986]; Myers 1989; Peterson 1993; Wein and Freeman 1995; Wenzel 1983, 1989; Whittles 1993), its presence does not prove that there are two modes of production in operation. Instead, cash not only can be but is utilized within the system outside of its capitalist trappings and, as such, it does not entail the introduction, insertion, or dominance of a capitalist mode of production inside the economy. Rather, as Sansom (1988: 159) suggests, people can resist

---

[1] According to Krauss and Golla (1981: 67)"... Athabaskan is the spelling preferred by the Alaska Native Language Center, since it reflects more directly the usual American English pronunciation..." Alternative spellings include Athabascan and Athapaskan. For additional discussion see Osgood (1971). It should be noted that at the 1997 annual meeting of the Tanana Chiefs Conference, Inc., the following resolution (No. 97-35), entitled "Correct Spelling of "Athabascan," was passed by the delegates:

> Whereas, TCC, Inc. is the tribal entity for the Athabascan tribes in the Interior of Alaska; and, Whereas the Athabascan Tribes of the Interior of Alaska take great pride in their heritage and name; and
> Whereas, it has come to our attention that some news agencies and other places have misspelled Athabascan.
> Now therefore be it resolved that the Tanana Chiefs Conference Board of Directors recognizes that the correct spelling of our tribal name is "Athabascan;" and
> Be it further resolved that the TCC Board of Directors considers the correct spelling of our tribal name as a point of honor and respect and would appreciate the correct usage by other entities.
> In light of the above resolution, Athabascan is spelled accordingly.

[2] As a resource in this sense, it does not have strictly monetary value; but operates as a variable resource with respect to its availability and immediate need within the economy as a whole. More discussion on this point follows later in this chapter.

"monetisation of the mind"; and, in effect, construct their own emic reality with regard to cash.

While the intent of the study is to address the role, place, and perception of cash with the context of a rural village economy, I also examine the harvest and use of wild fish and game resources; in large part because I believe that all resources together comprise the system, and to isolate a particular resource for examination is to create a false or erroneous analysis. Thus, all resources utilized by the members of four communities are taken into consideration in this discussion.

Today, as in the past, wild resources comprise an essential economic, cultural, social, and ideological part of Athabascan society[3] in general, and the four communities in particular. Land mammals harvested by the residents of the four communities include moose, black and brown bear, and a small number of caribou. For the residents of the four communities, migratory waterfowl provide an important source of fresh meat in the spring, as they did historically. Other bird resources harvested include ptarmigan and grouse. Not surprisingly, given the location of all four villages on water systems, fish provide an essential resource for both subsistence and commercial purposes. Fish harvested include salmon, whitefish, sheefish, trout, grayling, char, and pike. Trapping provides an important cultural activity, at least as important for its cultural and symbolic attributes and its reification of ethnic identity as for its economic attributes. Marten, beaver, and fox comprised the bulk of the resources trapped during the study year, a harvest consistent with historic practices. In addition to fish and game, berries and greens are also gathered; and provide an essential and highly valued contribution to the diet. Wood is gathered for construction and home heating purposes.

---

[3] Towards this end, Nelson (1982: 229) makes the following observation for Koyukon Athabascans:

> ... aside from economics, there are other very important dimensions which reinforce the Native people's dependency upon subsistence. Our studies of Koyukuk villages find that food from the land provides much more than subsistence alone- indeed it is a focal point of Koyukon culture. Native food is a source of psychological well-being, it comprises the matrix for social and ceremonial events and it is a vital component in traditional religious practices.

Cash is derived from a variety of sources, including limited wage employment, commercial sale of fish and furs, the sale of handicrafts, and state and federal public assistance programs. As is the case with all other resources mentioned here, cash is both seasonally and variably available; although, as Herscovici notes in the above quote, cash is one resource that is often difficult to attain. Fish and game resources, in combination with cash, comprise the economic system in the study area. How they function and operate internally, and their perception by people within the system, are the subjects of my analysis. To illustrate my point I utilize both qualitative and quantitative data, gathered in the context of a year-long study of resource use by members of the four communities. Before discussing the study area, the methodology utilized, and the data, I first situate my argument in the general and Northern theoretical anthropological literature.

Theoretical Overview

> *If economics is the dismal science, the study of hunting and gathering economies must be its most advanced branch...And in treatises on economic development, [hunter-gatherers are] condemned to play the role of the bad example, the so-called "subsistence economy" (Sahlins 1968: 85).*

Hunter-gatherer[4] studies are considered by most to constitute a "...distinct specialty within anthropology, a sub-field encompassing the work of literally hundreds of scholars in all parts of the world" (Burch and Ellanna 1994: 419). In spite of this, there continue to be questions concerning the viability of the subject matter. On the one hand, Burch (1994:442) suggests that hunter-gatherers are literally disappearing:

> The practical problems in hunter-gatherer research are due to the fact that there are few if any societies of foragers left in the world that have not been profoundly affected by, and to some extent integrated into, much larger-scale systems. In short, the very subject matter of our investigations is disappearing.

---

[4] While the term hunter-gatherers is utilized in this discussion, the term is synonymous with foragers. No distinction between the two is implied or intended.

Alternatively, Asch (1982b: 369) suggests that hunter-gatherers be considered as "equal participants in the world community", rather than as "our 'contemporary ancestors'." The debate over the utility of the term and practicality of the subject matter has been ongoing for at least the last decade (Barnard 1983; Denbow 1984; Headland and Reid 1989; Lee 1992; Myers 1988; Schrire 1984, 1989; Solloway and Lee 1990; Wilmsen 1988, 1989). At its most basic level, the debate centers on a critical question: does a distinctly hunting and gathering way of life actually exist or is it a creation or figment in the mind of the anthropologist in her zeal to find the 'primitive' and 'pristine'? The central issue is the degree to which contact with non-hunter-gatherers, specifically market or capitalist economies has, for all intents and purposes, fundamentally changed hunter-gatherer society. The intent of this discussion, in the words of Peterson (1991b:1), is to challenge " ... long standing materialist ideas about the central role of cash and commodisation in bringing about change in pre-capitalist societies;" and in so doing, illustrate that hunter-gatherers are not anachronisms, but rather a distinct and viable group of people.

Among anthropologists working with hunter-gatherers, the study of the impact of cash and commoditisation on hunter-gatherering subsistence systems has been a topic of interest for at least the past four decades, coinciding roughly with the beginnings of systematic ethnographic inquiry (Lee 1992). Likewise, the study of economic change has been a not insubstantial component of anthropological studies of northern hunter-gatherers since the mid to late 1950s, with increasing attention since the late 1960s.[5] For hunter-gatherers in general, and northern hunter-gatherers in particular, the "advanced branch of the dismal science" has been the focus of considerable attention in the past several decades, with entire volumes being dedicated to its study more recently (Parry and Bloch 1989; Peterson and Matsayuma 1991). The seminal article by Murphy and Steward (1956), followed more recently by Burkhalter and Murphy (1989), on the effects of involvement by hunter-gatherers in commercial production of what were formerly solely subsistence resources continues to provide a catalyst for rich discussion.

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[5] The focus on economic change in the north was stimulated in large part by the possibility and/or incidence of large scale economic development projects such as the James Bay Hydroelectric Project, the Mackenzie Valley Pipeline and the Trans-Alaska Pipeline. These types of projects provided the catalyst for major studies of Indigenous cultures and social change (Graburn 1969; Hallowell 1945; Honigman and Honigman 1965, 1970; VanStone 1965), and many that focused on social change and economy (Asch 1976b, 1977; Berger 1978, 1985; Feit 1982; Freeman 1976; Usher 1976a, 1976b; Watkins 1977).

There is general consensus within recent research both in the North and elsewhere that for hunter-gatherers, land and water, and activities based thereof, to the extent that they continue to be practiced, have a strong social, cultural, and ideological importance[6] (Altman and Peterson 1988; Asch 1979b; Berkes 1988; Brody 1982; Condon, et al. 1995; Dolitskey 1992; Dahl 1989; Ellanna and Balluta 1992; Feit 1994; Fienup-Riordan 1990a, 1990b, 1994 [1986]; Smith and Wright 1989). Agreement essentially ends on this point, however; and there is little consensus on the role or effects of cash on subsistence or resource harvesting economies.[7] The fact that the situation is highly dynamic and continuing to unfold, combined with a lack of consensus and widely divergent models utilized to explain the nature of the interrelationship between cash and hunter-gatherer or subsistence economies, make its study complex and confusing. A detailed review of the literature illustrates that Shipton's (1989: 3) analysis of the understanding of the meaning of money in African economies is applicable to far more than just the African context:

> Anthropologists today are without a commonly accepted paradigm for understanding the meaning of money in rural African life. Instead, the scene is something more like the stage floor at the end of a Shakespearean tragedy, strewn about with bleeding cadavers of actors who have slain each other one by one, lingering and overlapping in their throes.

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[6] Along these lines Usher (1976b: 14) provides the following description:

> ... These facts demonstrate a fundamental and continuing economic dependence by Native people on the traditional resources. This economic dependence explains why Native people have from time to time told this inquiry that the land is like a bank to them, their constant and reliable sustenance so long as it remains healthy. But there is also a deep rooted social and cultural reliance on the land. To Native people, the land is more than just a source of food or cash. It is the permanent source of their security and of their sense of well-being. It is the basis of what they are as people. They know that the land, and the birds, fish and animals it supports, have sustained them and their ancestors since time immemorial. Properly cared for, they feel it can always do so.

[7] While most researchers acknowledge the ideological importance of subsistence, the economic aspects of subsistence have tended to be the focus of attention. While this economic focus on subsistence has been critiqued (Hensel 1996) as misguided and ignoring emic perceptions of subsistence, that point is a matter of debate; and will not be addressed in this context. Suffice it to say that the economic aspects of subsistence cannot be denied, and in my opinion are more than worthy of study.

Shipton's analogy can arguably be extended to include anthropological understanding of hunter-gatherer economies in general, and northern hunter-gatherer economies in particular; that is, anthropologists have no commonly accepted model for examining contemporary hunter-gatherer economies. While there is general agreement that there are no 'pure' subsistence systems in existence today in that cash is a part of every contemporary hunting and gathering society, just what that infusion of cash means to a particular economy is a critical, perhaps the critical and as yet unresolved issue in studies of hunter-gatherer economies.[8] A goal of this dissertation is to elaborate on one example of the use of cash in the context of a subsistence economy, and to illustrate how the use of cash does not necessarily entail the introduction of a capitalist mode of production inside the economy.

To situate this discussion about cash, and to identify where there might be certain difficulties in the way the concept has been used in the context of hunting and gathering economies, it is useful to examine certain debates within the economic anthropology literature; and show how those who have chosen to define cash in a certain way have made certain theoretical choices.

Economic Anthropology

Economic anthropological theory is a complex body of theory-- borrowed from other disciplines and informed by a variety of perspectives (cf. Dalton 1967; Herskovits 1952; LeClair and Schneider 1968; Plattner 1989; Schneider 1974; Wilks 1996). While the issue of what comprises 'economy' has been discussed over the years, it is generally understood to refer to ".... how people organize production, consumption, and circulation of wealth in order to reproduce themselves" (Gregory 1989: 3).[9] Just how these actions are interpreted, and through what lens, varies considerably as the following discussion illustrates.

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[8] In discussing this issue over four decades ago, Firth (1965 (1939): 1) made the following claim:

> Long before the last war, it had become clear that primitive societies all over the world were being subjected to the impact of an industrial system coming primarily from the west, or at least originating in the development of western science and technology. Nowadays, partly as a result of the social and economic repercussions of the war itself, this process has become much more complex. There must be hardly any communities in the world, except perhaps a few in the heart of New Guinea and in the South American continent, which have not acquired at least the rudiments of steel technology and some trading relations with an external market system in which money is the prime medium of exchange.

Early Treatment of Economy

Much to the disgust of subsequent anthropologists,[10] early anthropological treatments of 'economy' generally tended towards extensive descriptions of technology and material culture. In fact, technology and material culture were often synonymous with economy in early studies. Unfortunately, as was noted by Gras (1927: 20) this approach ignores the processes involved in economizing, not to mention that economy is represented as a static, rather than dynamic entity:

> .... after all, fish hooks and canoes, spears and tree traps, fire drills and bronze adzes, while constituting the technological foundation of economic activity are in reality the tools and not the life of economic activity.

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[9] This is but one of many definitions of economy. Not surprisingly, definitions tend to reflect a theoretical perspective. For example, Burling (1962: 802), in his response to the substantivist-formalist debate, claims that:

> ... 'economics' has had almost as many meanings to anthropologists as has 'function', and the confusion between its various meanings has lead to as much misunderstanding. At one time or another, anthropologists have given at least five meanings to the term: 1) the study of the material means to man's existence; 2) the study of the production, distribution, and consumption of goods and services; 3) the study of the things that economists study; 4) the study of systems of exchange however they are organized; and 5) the study of the allocation of scarce means to alternative ends.

In contrast, LeClair (1962: 1189) claims that economics is the study of economizing and economizing is the allocation of scarce resources among alternative ends. LeClair's background in formal economic theory is implicit in his emphasis on maximization of wants and rational man. Because Gregory's above statement is simple, clear and relatively free of inherent bias, it provides a useful beginning point for this discussion.

[10] Schneider and LeClair (1968: 3) argue that "... Nineteenth century anthropology-- and even early twentieth century anthropology-- tended to equate "economy" with technology to the virtual exclusion of all else." Herskovits (1952: 57) reiterates this point, claiming that:

> ... Many elaborate studies were made of how pots were fashioned, or how houses hatched, or how fibers are woven or wood carving done. In these earlier, more conventional descriptions of non-literate people however, we seldom encounter statements as to the organization of those who make the pottery or of the values of the finished product, in terms either of other commodities or of such money as the tribe may employ, or of what gain accrues to these potters as a result of their specialized labor.

While subsequent critiques of early approaches to economics were not entirely unfounded, early descriptive accounts of 'traditional' or 'pre-contact' economies proved valuable in later analyses (cf. Herskovits 1952; Mauss 1967 [1925]). The emphasis on describing technology can be tied to a Boasian tradition, where considerable effort was placed on documenting cultures before they disappeared. These studies, while largely atheoretical, provided a rich ethnographic inventory base which subsequently underwent analysis by other anthropologists (Herskovits 1940, 1952; Mauss 1967 [1925]; Sahlins 1972).

Mirroring this early trend in anthropological descriptions of economy, a few anthropologists working in Alaska in the early twentieth century provided general ethnographic and archaeological accounts of 'traditional'[11] Athabascan life, focusing largely on economy, ideology and material culture[12] (de Laguna 1936a, 1936b, 1947; Osgood 1936a, 1936b, 1940). Subsequent ethnographic works, building upon existing accounts, provided information on the political and economic lives of 'traditional' culture (Clark 1974; Damas 1969; McClellan 1964, 1975; McKennan 1965, 1969a, 1969b; Osgood 1958, 1959; Oswalt 1962; Parsons 1921-22; Slobodin 1969). Interestingly, only been in the past several decades have contemporary northern economies been examined in the context of contemporary ethnographic reality (Asch 1984; Feit 1989, 1994; Langdon 1986; Lonner 1986; Nuttall 1992; Rushforth 1994; Wenzel 1981, 1989).

Malinowski's Lasting Influence

One of the first considerations of economy as something more than technology was provided by Malinowski (1961 [1922]) through his account of the *Kula* ring among the Trobriand Islanders.[13] While soundly criticized for his approach, Malinowski was nonetheless lauded for being one of the first anthropologists to examine economic activity systematically as a social phenomenon (cf. Gregory 1982, 1989). A criticism of Malinowski, however, was that he focused on the social aspects of exchange to the exclusion of understanding the economic rules guiding the exchange (Herskovits 1940, 1952).

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[11] While many anthropologists have commented on the meaning of 'traditional,' in this instance traditional refers to a somewhat ahistorical and static time, as is implied by the type of analysis discussed herein. See below for further elucidation.

[12] The Boasian approach in these earlier studies can also be criticized for its lack of attention to the ethnographic present in favor of ethnographic reconstructions, as in Osgood and De Laguna.

[13] Others had provided some ethnographic detail on the *Kula* (Barton 1922; Seligman 1910), but they suffered from a focus on technology.

Malinowski's analysis of the *Kula* was that it was a system of ritual exchange, "a passing from hand to hand of two meaningless and quite useless objects" (Malinowski 1961 [1922]:86). While noting that economic rules existed, Malinowski steadfastly focused on the social, or non-economic character of the exchange, arguing that the social aspects of economy were the important ones in 'primitive'[14] economies:

> Although, like every human being, the *Kula* Native loves to possess and therefore acquire and dreads to lose, the social code of rules, with regard to give and take, by far overrules his natural acquisitive tendency (Malinowski 1961 [1922]:96).

Malinowski (1961 [1922]:98) further elaborates:

> The Trobriander is not guided primarily by the desire to satisfy his wants, but by a very complex set of traditional forces, duties and obligations, beliefs in magic, social ambitions and vanities.

Malinowski's emphasis on the social elements of the *Kula* and the importance of these aspects in the context of economy was driven in part by his aversion to wholesale adoption of economic theory in describing primitive economic systems, and to the concept of rational man. The basic postulate of economic theory is that the allocation of scarce goods among alternative ends occurs through 'rational' choice. 'Rational man' is generally understood to be the one making the choices; that is, humans will make rational choices when faced with scarce goods. Referred to by Firth (1961 [1952]:1) as "the outstanding factor in human experience," the elements of scarcity and choice are critical to economic thought. Together with the idea of rational choice, they provide the basic premise of conventional economic theory. Of course, conventional or formal economic thought fails to address the idea that 'rational choice' is a subjective assessment.

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[14] Use of the term primitive is borrowed from early anthropologists, some of whom later commented on the appropriateness of its usage (cf. Herskovits 1952: vi). The term is a borrowed one, and is only used for consistency when discussing early anthropological accounts. It is not used with reference to contemporary societies, and its usage does not imply acceptance of the term by this author.

Although Malinowski's analysis has been soundly criticized, it stands out for a number of reasons. First, it marked the beginning of a controversy in economic anthropology which, while somewhat dulled, continues today: the formalist-substantivist debate. It took a few years for the respective 'sides' to become fully entrenched and for the debate to heat up, but the catalyst was at least partially imbedded in Malinowski's analysis of the *Kula*. Ironically, Malinowski's analysis was equally important for recognizing the importance of social aspects of economy, one of the few ideas upon which economic anthropologists continue to agree.[15]

In commenting on Malinowski's (and others) focus on social aspects of exchange, Herskovits' (1952: 57) disdain for the approach offered by Malinowski was evident. He complained that Malinowski and others:

> ...conducted their research and presented their findings on the principle that economic life in non-literate societies could not be treated unless consideration was given to every facet of tradition that impinged on the economic institutions of people. It is not difficult to understand how this position was reached. Economists, as has been pointed out, can take for granted the cultural matrix in which their data lodge. Early anthropologists, finding little to stimulate their research in the highly specialized problems considered by economists, retreated into technology. Reacting against this and other aspects of earlier work, these earlier writers brought into the fore-conscious the cultural setting of the economic data in societies other than our own. Tersely stated, it may be observed that if for the earliest anthropologists economics was technology, for these it was garden magic and gift exchange. *(emphasis added)*

If Malinowski's approach was a reaction to conventional economic theory, then Herskovits and Firth (a student of Malinowski's) can be seen as developing their arguments in response to Malinowski's emphasis. In so doing the stage was set for the binary opposition characteristic of the formalist-substantivist debate.

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[15] Along these lines, LeClair and Schneider (1968: 3) claim:

> ...[t]oday, all agree on at least this much: that economic activity, properly considered, is a social process of some sort or other. It might be necessary to take technology into account in considering certain aspects of an economic system, but technology is not the economic system itself.

Subsequent to Malinowski's analysis of the *Kula*, Firth published a treatise on the economics of the New Zealand Maori (1929) and later one on the Tikopia (1965 [1939]). In an effort to get past what he referred to as Malinowski's "common-sense descriptive economics"[16],[17] and what others have referred to as 'anti-economics,'[18] Firth, along with Herskovits (1940, 1952) and a few others began arguing for the validity of conventional economic theory, claiming that anthropologists had a lot to learn through the application of economic theory to 'primitive' economies. While their perspectives, methodologies, and arguments varied, both Herskovits and Firth stressed that people make choices from among alternatives in a rational manner and according to determinable principles, thus supporting the idea of rational man.

Noting that "[t]here has always tended to be some uncertainty on the part of anthropologists as to the use they could make of economic theory" (Firth 1965 [1939]: 7), Firth attempted to use conventional economic theory in his analysis of Tikopia economics. While his work is considered by some to be a landmark in economic anthropology,[19] Firth's treatise is notable for its application of economic theory to a 'primitive' and certainly non-western economy. In attempting to link economic concepts with ethnographic analysis, Firth (1965 [1939]: 27-29) was careful not to neglect the role of culture in economizing. Similarly, he was interested in constructs of and for economic behavior:

> The Tikopia economy is not a simple set of ecological responses. Its social parameters are significant for its form and efficiency... Any theory concerned with understanding the operation of the Tikopia economy must take into account the significance of choice and decision...

Finally, while Firth acknowledged the importance and potential of economic theory in elucidating anthropological understanding of economy, he understood that it was the responsibility of anthropologists, not economists, to do so:

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[16] (cf. Firth 1964)

[17] In commenting on Malinowski's use of economic concepts, Firth (1964: 220) notes that "...this is not the terminology of economics, it is almost the language of the housewife..."

[18] (cf. LeClair and Schneider 1968: 4-6)

[19] Cook (1966) credits Firth with being one of the first anthropologists to study economic theory.

> The lack of a well constructed bridge between economics and anthropology helps to explain why, in spite of great developments in the theory and methods of the latter since the beginning of the century, the concrete achievements in economic anthropology have not been greater. It also throws the major burden of construction on the anthropologist himself (Firth 1965 [1939]:13).

Rational Man and Formal Economics

In contrast to Firth, whose work was based on substantial field work, Herskovits'(1940) The Economic Life of Primitive Peoples, later revised and published as Primitive Economics (1952), was based on an exhaustive search of the ethnographic literature.[20] Borrowing from conventional economic theory, Herskovits (1940, 1952) furthered the idea of rational man, focusing largely on aspects of individual decision making in an attempt at developing models of economic behavior. Claiming that "practically every economic mechanism and institution known to us is found somewhere in the non-literate world," Herskovits (1952: 488) based his argument on several assumptions. First, he argued for the existence of universal laws which dictate rational man's behavior. Second, he postulated that in a situation of unlimited wants and limited resources,[21] the individual will maximize gains and minimize effort to the best of her ability. A major criticism of Herskovits' approach (and of formal economic theory in general) was that culture is largely ignored in the decision-making process.[22] Like other proponents of

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[20] Herskovits' revision contained an important philosophical change. The earlier version reflected a far less sophisticated understanding of the very economic theory he was discussing, sometimes disparagingly. For example, Herskovits (1941: 270-271) questioned the utility of the term economic man; "[How] can its continued use be defended when investigators of human societies all over the world are unanimous in testifying that no such creature exists or, as far as the data indicate, ever did exist?" An infamous exchange with economist Frank Knight (Herskovits 1941; Knight 1941), along with time caused Herskovits to revise his opinions of the utility of economic man and other conventional economic concepts, as is illustrated in the later publication.

[21] It is important to note that the idea of maximization does not specifically say what is maximized. Implicit in most applications of maximization theory is the notion that profit is to be maximized. However, it would be acceptable to claim that instead of profit, an individual will likely maximize different things at different times. What is maximized will likely change, but it is safe to assume something that is valued will be maximized.

[22] As Shipton (1989: 5) remarks:

> Values, categories, and beliefs are underrepresented as decisions are traced. Humans come out looking *too* rational. Real people sometimes hear wrongly, forget, jump to conclusions, and rebel against reason. Ironically, then, decision-making models that focus

neoclassical theory who argue for the universal applicability of economic theory, Herskovits (1952: 24) acknowledged that cultural relativism is essential to the study of economic behavior across cultures:

> The principle of maximizing satisfactions by the conscious exercise of choice between scarce means is valid because we find that this does occur in all societies. The cross cultural perspective, however, gives us pause when defining "rationality." We are tempted to consider as rational the behavior that represents only the typical reactions to be expected of those who order their lives in terms of the economic systems of Europe and America, where it is rational to defer the gratification of wants, to accumulate resources, to produce more goods and multiply services. Yet, as we shall abundantly see, there are many cultures, if not a majority of them, where the deferment of wants is held to be disadvantageous, where best judgment dictates that resources be expended, where there is no tradition of expanding production and increasing services. Nonetheless, in societies having traditions of this sort, choices are not only made, but debated...

While not specifically arguing against the importance of culture, Cook (1966: 329) offered a perspective more typical of formalist approaches to economy than that put forth by Herskovits:

> A science of economic anthropology will emerge only as a hybrid discipline-- representing the fusion of two trends: the study of economic theory by anthropologists... and the development of an anthropological perspective by economists... the eventual emergence of a general theory of comparative economic systems depends largely upon how well economics can be anthropologized. The infusion of cultural relativism into the economist's world view is long overdue... Nevertheless, any general theory of comparative economics must ultimately come from the sophisticated model building skills of the economist applied to data collected by systemic ethnographers who are aware of the relevant categories and conceptual tools of economic analysis.

Polanyi and Substantivist Thought

In general, while some formalists advocated for a 'scientific theory of economy' in which culture played a minor role (Ortiz 1983; Schneider 1974), most formalists recognized the need and argued for the role of culture in the study of economics. In

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on the individual are often more appropriate for studying the behavior of the aggregate. But rational aggregates may aggregate into irrational collectivities... So *homo rationalis* decision theory, is not without its problems and contradictions either.

arguing for maximizing behavior as a universal phenomena, Burling (1962: 819) warned that:

> Unless the anthropologist uses concepts of economics, cost, value, demand, supply and so on in a much broader context than is the custom of the economist, over a range of meaning far wider than that which is priced, he had better stop talking about economics.

In response to the scientific or formal approach to economy, with its concomitant enthusiastic adoption of economic concepts, terms and models, Polanyi (1957), followed by Dalton (1961) and others (Murra 1981; Valensi 1981; Wachtel 1981) offered an alternative approach. An economic historian, Polanyi cautioned anthropologists about indiscriminate borrowing from economic science, urging them instead to develop their own vocabulary based on ethnographic analysis. Emphasizing the importance of ethnographic fact, Polanyi (1957) argued that only through comparative analysis could anthropological concepts of rational action, reasoned economic action, and economizing behavior be developed.

Polanyi (1957) denied the relevance of economic theory to all but contemporary market economies, a form of economy which Polanyi argued was only found in western society. Further, he argued that the invention of market organization (a relatively recent phenomena) was responsible for separating the economic sphere from its integration with the rest of society (Polanyi 1957). Other forms of economy included reciprocity and redistribution; the former being characteristic of tribal societies. The basis of Polanyi's argument can be found in his distinction between the formalist and substantivist meaning of economic:

> The substantive meaning of economic derives from man's dependence for his living upon nature and his fellows. It refers to the interchange with his natural and social environment, in so far as this results in supplying him with the means of material want satisfaction. The formal meaning of economic derives from the logical character of the means-ends relationship, as apparent in such words as "economical" or "economizing". It refers to a definite situation of choice, namely that between the different uses of means induced by an insufficiency of those means. If we call the rules governing choice of means the logic of rational action, then we may denote this variant of logic, with an improvised term, as formal economics (Polanyi, et al. 1957: 243)

Extending this distinction to anthropology, and distinguishing between the formalist (grounded in universal laws, logic) and the substantivist (grounded in ethnographic fact) schools, Polanyi helped to entrench the dichotomy further, providing additional fodder for the still active, though muted, controversy (Dalton 1967; LeClair and Schneider 1968; Ortiz 1983). The debate, in its various forms, hinges on the question of the applicability of formal economic theory to the study of 'primitive' and 'peasant' economies. Formalists argued for the universal applicability of formal economic theory; and substantivists argue that formal economic theory is limited in application to the market-oriented, price-governed economic systems of industrial economies. Halperin (1985: 360) elaborates:

> ... Formalists argued that formal economic concepts were universally applicable and, therefore, truly cross-cultural, and that substantivist concepts were particularistic because they were descriptive and unsystematic. Substantivists, on the other hand, argued that formal, in the sense of conventional, economic concepts were particularistic and ethnocentric and that only substantive concepts were cross-cultural because only they dealt with patterns and variability in livelihood processes.

Following Polanyi in both method and theory, Sahlins (1965, 1968, 1972) was overtly critical of formalist approaches. Utilizing a wholly culturally relativistic approach, Sahlins (1972) reflected a growing interest among anthropologists in economic and social change among hunter-gatherers. Of the collection of essays in Stone Age Economics, Sahlins (1972: xi-xii) claimed:

> All were conceived and here assembled in the hope of an anthropological economics, which is to say, in opposition to businesslike interpretations of primitive economies and societies.... Broadly speaking it is a choice between the perspective of Businessmen, for the formalist method must consider the primitive economies as underdeveloped versions of our own, and a culturalist study that as a matter of principle does honor to different societies for what they are.

While there continues to be little agreement on the applicability of economic models and concepts to historically non-market economies, the tenor of the substantivist-formalist debate softened through the years and no longer serves as the focal point for economic anthropology. This is not to say that the dichotomy does not continue to surface, as Halperin (1985: 360) notes:

> ...the notion that formalists count things and build models, whereas substantivists deal with abstract concepts or complex descriptions but not in systematic ways, is still very common.

Perspectives on Northern Economies

Conceptual remnants of the formalist-substantivist dichotomy continue to influence anthropological accounts of Northern economies, particularly with respect to the use of cash. Beginning in the late 1950s and early 1960s, and consistent with 'development' studies occurring in the North around this time, a distinction was made between the subsistence or 'traditional'[23] and market sectors of the nothern economy (Wilmott 1961). Referred to by Wilmott (1961) as a dual economy, the subsistence sector comprised all that was 'traditional'-- that is, harvesting fish and game for use within the domestic unit. In contrast, the market sector, comprised of commodification of harvests or participation in wage labor, represented a 'foreign entity' which came packaged together with the western, capitalist ideas of profit maximization and individualization, among other things. Following Wilmott, Berger (1978:21) characterized the northern economy as "mixed," with a "unique unity" between the two economic spheres:

> ... in the north today, the lives of many native families are based on an intricate economic mix. At certain times of the year, they hunt and fish; at other times they work for wages, sometimes for government, sometimes on highway construction, sometimes for the oil and gas industry ...

The model of the dual nature of the northern economy proved to be popular among many anthropologists working in the north (Bennet 1982; Bone 1989; Bosworth 1989; Burch 1985; Dolitskey 1992; Langdon 1984; Langdon and Worl 1981; Loon 1989; Quigley and McBride 1987; Shinkwin and Case 1984; Wolfe and Ellanna 1983; Wolfe, et al. 1984). While characterizations of the nature of northern economy take different forms, the dichotomy between the native or traditional economy and the modern or industrialized economy is a critical premise upon which these types of representations rest. As we shall see, however, the premise is flawed; and the approach lacks utility with respect to understanding fully the internal dynamics of northern economies.

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[23] Also referred to as 'household' economy. For further discussion see (Wilk 1989).

As in Canada, large scale development projects (e.g. Trans-Alaska pipeline) and related political developments such as Alaska Statehood,[24] passage of the Alaska Native Claims Settlement Act (ANCSA),[25] and development of federal legislation regarding subsistence use of fish and game resources by Alaska Natives,[26] stimulated considerable work focusing on hunter-gatherer resource use in Alaska. Likely the most influential and certainly the majority of work on rural economies in Alaska has been conducted by a research division within the Alaska Department of Fish and Game, an entity established under the state Subsistence Law of 1978.[27], [28] From its inception through the mid 1980s, the Subsistence Division focused its research efforts on describing and documenting the subsistence economies of primarily rural Alaska (Fall 1990; Wolfe 1981, 1983; Wolfe and Walker 1987). Borrowing heavily from research conducted largely in Canada (Freeman 1976; Usher 1976a, 1976b, 1981, 1982), the paradigm within which the economy was discussed was that of the 'dual economy'. The rural Alaskan economy was thus described as a "mixed economy" characterized by "mutually supportive market and subsistence sectors (Wolfe and Ellanna 1983: 272). This economy, also referred to as a subsistence-based socioeconomic system (Wolfe and Ellanna 1983: 272) is characterized by a domestic mode of production in which production capital, land, and labor are controlled by extended kinship-based production units.

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[24] Alaska became the forty-ninth state on January 3, 1959.

[25] ANCSA, signed into law on December 18, 1971, extinguished aboriginal rights to hunting and fishing in exchange for fee simple title to 40 million acres of land and 962.5 million dollars (for a more detailed discussion, refer to Arnold (1976).

[26] ANILCA, or Alaska National Interests Lands Conservation Act, was passed into law in December 1981. The law was an attempt to deal with aboriginal hunting and fishing rights which were not dealt with under ANCSA. Under ANILCA, subsistence use of resources is given priority over commercial and sports use of resources. Further, subsistence is restricted to rural residents. Specifically, the law provides for "...the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption such as food, shelter, fuel, clothing, tools or transportation..." (Title VIII: Sec. 803). Because the Alaska constitution prohibits discrimination on the basis of residence, however, Alaska law is currently out of compliance with federal law. As a result, as of July 1990, the Federal government has management authority over fish and game on federal lands, roughly 60 percent of all the land in the state. See Caulfield (1992) or Huntington (1992) for further information on wildlife management and subsistence hunting in Alaska.

[27] Passage of the law was stimulated by the Trans-Alaska Pipeline, the construction of which resulted in increased use of, and competition over, fish and game resources. In addition to authorizing and protecting subsistence use of resources as the priority use of Alaska's resources, the state's first subsistence law resulted in the establishment of the Subsistence Division. Primarily a research division, the intent of the subsistence division was to "... compile existing data and conduct studies to gather information... on all aspects of the role of subsistence hunting and fishing in the lives of the residents of the state...". While the law has subsequently been repealed, overruled, and ruled unconstitutional, the subsistence division's mandate remains the same: collect information on resource use by the state. The subsistence division has collected information on fish and game resource use by residents of 190 communities in the state, in addition to resource use by residents of the major urban centers, Juneau, Anchorage, and Fairbanks. Refer to Case (1984; 1989) or Kancewick (1991) for additional discussion on legal issues driving subsistence hunting and fishing in Alaska.

[28] Under the law passed in 1978, subsistence uses were defined as:

> The customary and traditional uses of wild, renewable resources for direct personal or family consumption, such as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible by-products of fish and wildlife taken for personal or family consumption [AS 16.05.940 (30)]

As with the notion of the 'dual economy,' the distinguishing feature of subsistence-based socioeconomic systems is the primary economic, social, and cultural reliance on fish and game resources. Cash and current technologies are utilized, but they are integrated into the community's economic and social activities "...so as to be mutually supportive" (Wolfe and Ellanna 1983: 252). This stands in stark contrast to market-based societies in which the market sector is the cog of the economic and social organization.

The only difference in the two systems, it is argued, is the extent to which the hunting, fishing, and gathering sector drives the social and economic organization; or, alternatively, the extent to which cash has permeated the community's social and economic fabric so that its attainment is of primary importance. Following this logic, one could argue that the only difference between urban and rural subsistence hunters is that the subsistence hunter in rural Alaska uses cash only to subsidize subsistence whereas the urban 'subsistence' hunter uses subsistence only to subsidize cash. The underlying assumption is that cash has a *standardized value*, so that it is essentially the same entity in both subsistence-based and market-based socioeconomic systems. As explained by one anthropologist (Ichikawa 1993: 334):

> ....the state imposes indirect impacts through its monetary system. Currency is one of the key economic elements of an independent state. This

> is reflected in the currency itself which has always the name of the issuing state printed on it. To use the currency means, therefore, to follow the value system of the state monetary system, in a sense. This may not mean much for us to whom the currency is an indispensable medium of commodity exchange. But for the people less dependent on state currency, this may means something, which is related to the choice between the contending economic systems. (emphasis added)

This misperception or usage of "cash" parallels the misguided way in which the formalists (in their most extreme form) have defined "economy"-- that is, it has universal properties which determine its meaning without reference to cultural values.

In a departure from this type of analysis, and a form running parallel to the substantivists, I argue for a culturally relative (or context rich) understanding of cash. This type of argument has been furthered by several anthropologists in describing Indigenous economies (Lonner 1986; Peterson and Matsayuma 1991; Sansom 1988; Wenzel 1983, 1986a, 1989). Rather than arguing for a standardized value of cash with its concomitant value system, I argue for a culturally relative evaluation of cash, based not on an external reality but rather on a reality created and manipulated by people within the system.

Exchange

Another way that the impact of cash on hunting and gathering economics has been considered is through examination of relations of exchange. Many anthropologists have grappled with developing theories of exchange, most notable of these, particularly with regard to hunter-gatherer economies, was Mauss (1967 [1925]). Following Malinowski (1961 [1922]), Mauss developed a theory of exchange based on an evolutionary continuum. Malinowski (1961 [1922]) placed pure gift, real barter, and reciprocity on opposite and intermediate ends of the spectrum respectively. Arguing that these exchanges formed a "continuum of reciprocity," Malinowski (1961 [1922]:176) provides the following description of the system:

> I have on purpose spoken of forms of exchange, of gifts and counter-gifts, rather than of barter or trade, because, although there exist forms of barter pure and simple, there are so many transitions and gradations between that and simple gift, that it is impossible to draw any fixed line between trade on the one hand and the exchange of gifts on the other... In order to deal with

> these facts correctly it is necessary to give a complete survey of all forms of payment or present. In this survey there will be at one end the extreme cases of pure gift, that is an offering for which nothing is given in return. Then through many customary forms of gift or payment, partially or conditionally returned, which shade into each other, there come forms of exchange, where more or less strict equivalence is observed, arriving finally at real barter.

Working with the basic premise that gifts are voluntary but in fact are given and repaid under obligation, Mauss (1967 [1925]) referred to total prestation, debt economy, and commodity economy as the stages of exchange. Like Malinowski, Mauss (1967 [1925]) argued that the first stage of economy is essentially simple exchange in which goods and service are given freely with no expectation of return. The second stage is an equivalent exchange, based on balanced reciprocity. The critical feature of this type of exchange is the social relationship: the personal relationship is the object of desire, not the object exchanged (Mauss 1967 [1925]). The relationships established through exchange are merely a means to an end in the final stage: the exchange, or more correctly, that which is exchanged, is the desired end product. The shift occurring between gift and commodity economies lies primarily in the nature of the personal relationship of the exchangers, and secondarily in the things exchanged. In the gift economy, the personal relationship is the goal of the exchange; there is no inherent relationship between the things exchanged. Conversely, in the commodity economy, the personal relationship serves solely as the vehicle through which the exchange occurs: it is the exchange that is desired. Because of this, a relationship between the objects exchanged, that of purchase and sale, is established in the commodity economy. In short, price and value essentially develop at the expense of personal relationship.

Sahlins (1965) also focused on principles governing exchange and distribution in non-market economies. Distinguishing between commodity and non-commodity exchange, Sahlins (1972: 196-205) argued that commodity and gift exchange are two points on a continuum, with kinship distance providing the key variable in the movement from one extreme to the other. He contended that as a general rule, gift exchange tends to be between people who are relatives. As the kinship distance lengthens and the people become strangers, commodity exchange emerges.

Mauss' and Sahlins' distinction between gift, debt, and commodity economies and the associated inherent variations on personal relationships are useful in understanding the nature and effect of the involvement of cash in hunter-gatherer economies in general, and northern hunter-gatherer economies in particular. Rather than focusing on sectors of the economy, the salient feature distinguishing subsistence or natural economies from market economies is the nature of exchange. If cash and the acquisition thereof is the guiding principle of the economy, then the nature of the exchange is in the thing exchanged: the personal relationship is secondary and largely unimportant. On the other hand, if exchange is largely characterized by reciprocal obligations, and if the goal of the exchange is in the personal relationship rather than the thing exchanged, then the economy can be characterized as a gift, or debt economy.

The Gift

In discussing northern economies, most anthropologists point to gift exchange (as described by Mauss and Sahlins) as being a hallmark of traditional subsistence economies. By and large, goods and services, and in many instances labor,[29] have been shown to be exchanged along kin-based lines. While predictive models call for the eventual displacement of the debt economy with a commodity economy, in which the personal relationship is absent from the exchange, this has yet to occur. In fact, with the involvement of cash, it has been noted that both types of exchange can and do occur simultaneously, and cash transactions are not restricted to the latter. Ellanna and Balluta (1992: 250) in their study of the Inland Dena'ina of Nondalton noted that:

> "Gift exchange," in which there is a personal relationship between the individuals who exchange goods and services and "commodity exchange,"

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[29] For example, in a study of Athabascan fishing patterns (Wheeler 1987), I demonstrate that among people fishing for subsistence purposes, labour is always divided and shared along kin-based lines.

> in which impersonality and individual maximization prevail, were both operative among the inland Dena'ina of Nondalton in the mid 1980s. All purpose money (cash) was involved in both types of exchanges as well.... The data derived from the inland Dena'ina raise some serious questions about the assumption that cash and services for which people are paid actually form a separate, albeit, integrated economic sector.

This is an important point which clearly challenges the notion of a dual economy. If, as it appears, cash can and does occur in the context of gift relations of exchange, then it is arguable that cash and services for which cash is paid do not signify or comprise a separate sector. Perhaps then, it makes more sense to examine the internal workings of the economy, rather than imposing externally-derived views on the study of the economy. One way in which this can be done is by examining relations of production; or more simply, how the society reproduces itself economically.

Perspectives on Cash and Commoditisation in Hunter-Gatherer Economies

Responding to the increasingly more common involvement of cash in formerly subsistence economies, Godelier (1972a, 1972b, 1974, 1977) and Meillassoux (1973, 1978a, 1978b, 1983) asserted that economy could be better understood by understanding how society reproduces itself. Working from a comparative and historical perspective, both Godelier and Meillassoux shifted the focus from the relations of exchange to those of production. In examining human processes, they emphasized the importance of careful selection and definition of terms, as Meillassoux (1983: 61) explained:

> I maintain, and I stress it as much as possible, that progress in the human sciences can only stem from strictly defined concepts and their relevant application to precise situations.

Utilizing the terms pre-capitalist and capitalist modes of production, both Meillassoux and Godelier viewed money as the link between the two modes of production. Godelier (1977) made the important point that a single object may be exchanged as a gift within a tribal economy and as a commodity in a different economy. Godelier's recognition of the dual properties of a thing is important to the point argued in this dissertation, that cash has to be considered within an emic reality in order for it to be understood in the context of rural economics. If it can be argued that something can be exchanged as a gift within a tribal economy and as a commodity within a different economy, then it can be logically argued that something can be exchanged as a gift within a market economy, and a commodity within a tribal economy. For this point to be argued effectively in the context of cash, it must be necessarily be based on an emic or context-rich understanding of cash.

Another point furthered by Godelier concerned the viability of pre-capitalist economies: contrary to popular or conventional 'wisdom,' Godelier (1972a) argued that pre-capitalist modes of production are not moribund. In arguing this point, Godelier forwarded the idea that it was possible for different modes of production to co-exist side by side. In his view, how society reproduced itself economically had to do with which mode of production was dominant. In other words, pre-capitalist and capitalist or non-market and market modes of production could operate simultaneously (although one would always be dominant) (Godelier 1977). This was an extremely important point for economic anthropology, which, up until that point, had generally allowed for the existence of only one economic system at any given point in time.[30] This perspective was made most famous by Bohannon in his article "The Impact of money on an African Subsistence Economy"(1967 [1959]).

Presented as the result of a confrontation between two economies (i.e., pre-capitalist and capitalist), Bohannon blamed the destruction of the 'traditional' economy on the introduction of cash and its inherent conversion possibilities. According to Bohannon (1967 [1959]), during traditional times the Tiv economy was both pre-capitalist and multicentric. Separation between the two spheres of exchange was enabled by the lack of possibilities for conversion. With the introduction of cash and its possibilities for conversion, however, the Tiv economy rapidly lost its multicentric dimensions. Bohannon (1967 [1959]:133) thus argued that the involvement of cash was the destructive or transformative force in subsistence economies:

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[30] While questioning the utility of articulation theory or modes of production, Shipton (1989: 4) makes the following observation:

> Modes, forces, and relations of either became procrustean beds into which all societies and economies had to be fitted, or multiplied, until as one critic pointedly observed, each Andean valley has its own mode of production and individuals may change them two or three times a week, like underwear... (Foster-Carter 1978: 239).

In spite of his criticisms, Shipton (1989) nonetheless credits articulation theory for the long lasting ideas that multiple modes of livelihood can co-exist and that non-market economic behaviors such as reciprocity and redistribution are not disappearing.

> In short, because of the spread of the market and the introduction of general purpose money, Tiv economy has become a part of the world economy... Money is one of the most shatteringly simplifying ideas of all time, and like any new and compelling idea, it creates its own revolution. ... Its course may be painful, but there is very little doubt about its outcome.

Though sometimes characterized as a substantivist (Shipton 1989), Bohannon's perception of the impact of money on the Tiv 'traditional' economy is based on formalist premises of economy, as well as the flawed notion that money or cash has standardized value. Likewise, Bohannon, like others, appears incapable of conceptualizing Godelier's idea of two modes of production operating simultaneously.

Based in part on ideas furthered by Godelier (1972a, 1972b, 1974, 1977), Asch (1977, 1979a, 1979b, 1982a) analyzes the utility of the mode of production in explaining the process of economic change among hunter-gatherers. Arguing that proponents of the model which presents northern economies as a mixed or dual economy err in defining economy only on the basis of the technical factors of production, Asch (1977, 1979a, 1982a) claims that northern economies can only be fully understood by "including within our definition of economy the institutional framework of production" (1982a: 5).

Following Godelier's point that two modes of production can and often do operate simultaneously, Asch (1979a: 88) emphasizes that:

> .... the processes of material reproduction in human society can not be understood merely by analyzing the "technical" aspects of production. Rather,...the framework of analysis must include at the most fundamental level both the "physics" of production and the social relationships human beings enter into in order to motivate or operate the technical dimensions of production.

Asch (1982a) argues that the structure of material reproduction incorporates both technical and social components, and it is essentially the interaction of these components which provides for the structure of the mode of production. The overall structures allow for some elasticity, although they are not, as he (1979a: 92) warns, "infinitely malleable." Structural transformations can and do occur; and when they do it is largely due to a high level of antagonism between the social and technical forces of production, such that the two are functionally incompatible. It is, however, critical to stress that these actions are not unconscious-- choice and logic are key factors in the ongoing operation and transformation of the mode of production.

Asch (1979a, 1982a) supports Godelier's notion that two modes of production can co-exist, but he argues that one or the other will dominate-- and the dominant mode of production is reflected in the social relations of production. This thinking runs counter to previously discussed models; and supports the point argued in this dissertation, that the presence and use of cash does not suggest the demise of the 'natural' or 'traditional' economy; that is, as long as the traditional social relations of production dominate, cash can be utilized outside of a capitalist mode of production; and in fact, there may be other ways to reproduce oneself economically. Asch's argument also points to the continued viability of 'traditional' economies in spite of interaction or limited involvement in capitalist economics. As Lee (1992: 43) suggests:

> If indigenous peoples want to adopt a Western (or Soviet) way of life, the door is open; in fact, the pressures to conform are immense. The fact that this has not happened; that some foragers still pursue alternative lifeways not in isolation but in full awareness of alternatives, is a persuasive argument against the two propositions that framed the present essay. *There is something out there beyond the reach of the world system (capitalist or otherwise). The "system" is powerful but not omnipotent.* Pockets of resistance persist and show us that even in this hard bitten post modern age other ways of being are possible.

Von Volker (1993) draws on elements of the mode of production model in his analysis of the economy of the Ayoreode of northwest Paraguay, in which he addresses the dynamic nature of the Ayoreode economy. Von Volker suggests that hunter-gatherers have a "dynamic adaptive potential that enables them to resist the destructive powers of the world system predicated on a market economy" (1993: 785). He further explains:

> The Ayoreode have one basic economic strategy for dealing with the external strategies which aim to solve the problems of Indigenous peoples by integrating them into the dominant society: They adapt to imposed economic activities (e.g. projects, development aid and wage-labour) by acquiring (gathering) the resources connected with these activities in such a way that they are able to follow their own interests and satisfy their own needs. However, the techniques of hunting and gathering have changed: begging, agriculture and wage-labour are three of them, and all are practiced according to the same underlying premises, even though, in the eyes of the dominant societies, they differ quite considerably (von Volker 1993: 790).

Von Volker describes a society whose technical and social relations of production are rooted in the traditional economy. The Ayoreode are utilizing what is offered and adapting it to their own ends-- all within a domestic mode of production. Von Volker's analysis supports the notion that the presence of cash does not entail the capitalist mode of production; but rather it points to the creative means by which cash can be, and likely is, internalized.

In arguing for the utility of the mode of production model, Asch (1979a) argues against what he refers to as the 'ecological-evolutionary' approach that is implicit in most models of culture and economic change in the North and elsewhere. Of this approach to economic change, Usher (1993: 105) writes:

> This model of economic development and cultural change informed much of the theory and practice of economic and social development, as promoted by western nations, in both the Third World, and in their own rural and remote areas. Certainly it informed the ideas of those responsible for the development of northern Canada during the post-war era. It is the intellectual foundation of the more popular view that sees industrialization as inevitable, desirable and beneficial-- the more the better and anyone not yet on the train should certainly hurry aboard.

This perspective is based on the assumption that the natural or traditional economy is moribund; and further, that it is inevitable that the traditional/pre-capitalist/indigenous economy will be replaced with a commodity-based or capitalist economy. This model implicitly presumes that hunter-gatherers are an early or primitive stage of development;[31] once in contact with industrial society, they become acculturated and modernized. The hunting and gathering adaptation is reduced to a cultural legacy at worst, a recreational pursuit at best. A corollary assumption underlying the evolutionary paradigm is that hunter-gatherers are passive victims of the economic world: they are not actors; rather they are acted upon. The forces behind this linear shift towards a commodity-based economy are assumed to be external to the societies or cultures affected. As Solloway and Lee (1990: 111) explain:

> For some, "contact" appears to be unconsciously equated with "domination." The possibility of trade or exchange *without* some form of domination is excluded from the range of outcomes.

As long as there is continued access to trade goods, therefore, the shift from subsistence economy to dependence on trade is essentially irreversible. In a critique of this approach, Sahlins complains that, "... [anthropologists], having equipped the hunter with bourgeois impulses and Paleolithic tools ... judge his situation hopeless in advance" (1968: 86). Whether this process is represented as a result of acculturation, modernization, economic subordination, evolutionary change, or simply economic development, the end result of cash or commodity-based hunter-gatherers is painted as inevitable.[32]

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[31] In a commentary reflecting the commonly accepted unilineal understanding of the 'acculturation process', Hughes (1950: 101) said the following:

> ... Until now a major emphasis of works on the remaining tribal peoples of the world has been on the effect of contact with the European world of colonial authority and economic enterprise. The new emphasis... will be on the contact of such peoples with the new agents of contact and control, the new or revived autonomous governments and native urban elites.

Clearly, Hughes' understanding of tribal peoples is that they were dying out (e.g., "the few remaining"); and they were headed inexorably towards assimilation.

[32] Indeed, there are those that would argue that hunting and gathering as a way of life is dying, a perspective which clouds contemporary studies of hunter-gatherers and lends fodder to the debate over whether the term hunters and gatherers is merely "an anachronistic reference to their antecedents" (Peterson 1991a: 67) or whether it actually refers to a viable people. While implicit to this study, the perspective taken in this dissertation is that indeed, hunting and gathering as a way of life and perhaps more importantly, a way of being, is viable and merits study.

The evolutionary perspective took firm hold of anthropological thought in the form of acculturation, modernization, or dependence theory. As originally defined by Redfield, Linton, and Herskovits (1936: 149):

> Acculturation comprehends those phenomena which result when groups of individuals having different cultures come into first hand continuous contact, with subsequent changes in the original cultural patterns of either or both groups.

The acculturation model gained wide acceptance in the late 1940s and was used in depicting many different peoples in a variety of different situations (Beals 1952; Hallowell 1945; Herskovits 1937; Oswalt and VanStone 1963; Tax 1952; Vanstone 1960).

Reflecting elements of the acculturation model, modernization, dependency theory, and world systems theory, all argued variations on a theme concerning the nature of industrialization of developing countries. Largely a product of social, political, and economic thinking at the time,[33] modernization, dependency, and world system theory all experienced popularity among anthropologists beginning in the mid 1960s and lasting well into the 1980s (Hoben 1982; Nash 1981). In general, it was argued that industrialization would follow the model set by the western world; that is, colonialization and exploitation (Hoben 1982; Taylor 1979). The thinking at the time was that no indigenous group existed that had not experienced the repercussions of domination and colonialization (Wolf 1982). Hunter-gatherers (and peasants, and essentially anyone within the developing nations) were viewed as an anachronism; and, at least implicitly, absorption by capitalist of non-capitalist societies was essentially seen as social progress.

Dependency or world systems theory presented the interaction between capitalist and non-capitalist economies as a violent meeting, while modernization theorists predicted more of a benevolent absorption.[34] According to dependency or world systems theory, which stresses the unity of the world system, the core areas of market system exploit the peripheral areas through a process of unequal exchange (Wallerstein 1974, 1986). Thus the periphery (read rural villages) is portrayed as a passive victim, at the mercy of the will of the distant but dominant market system, or 'core.'

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[33] Modernization theory developed out of the post-World War II pro-development thinking, and dependency theory developed in partial response to the exploitative nature of modernization thought. The two schools of thought held different but related peerspectives on development and/or progress. While modernization theorists viewed the elimination of pre-capitalist economies in a positive light due to the material benefits that would come to these formerly 'uncivilized' cultures, dependency theorists feared that pre-capitalist economies would be decimated in the course of development.

[34] Of this school of thought, Shipton (1989:5) makes the following observation:

The influence of evolutionary models of change, whether world systems theory, dependency, or modernization theories, in explaining change in the North during the late 1950s through until the early 1970s was powerful:

> ... The modernization/acculturation model ...was then virtually the sole paradigm of social change and economic development and a large body of anthropological literature appeared to support this case. In this view, the concepts of modernization and industrialization were virtually interchangeable (Usher 1993: 104).

As was true of its influence worldwide, evolutionary models of culture and economic change in the North were stimulated in large part by political and economic motivations. While Usher refers specifically to the Mackenzie Valley pipeline, many projects in the North were backed by similar motivations. Usher (1993: 103-104) explains:

> ...Advocates of oil and gas development--industry, all levels of government, local business interests--characterized the north as a frontier awaiting development, which could only benefit from the pipeline. In both formal statements and informal advocacy, Native people were said to suffer from too much unemployment and welfare, too little income and too little education and training to take advantage of wage employment opportunities; hence they would benefit from industrialization. The fur trade and life on the land were dying, and in any event the youth did not want such a life. Only industrial employment generated by the extraction of oil, gas, and minerals could provide for the needs of the growing population.

This perspective proved popular among anthropologists; and studies reflecting the acculturation/modernization perspective proliferated, especially during the 1960s and 1970s.[35] Studies emphasizing this type of perspective were numerous, and evolutionary

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> By the 1960s, dependency theorists and others sternly criticised earlier functionalists for ignoring, in the search for uncontaminated cultures, money and other links between indigenous peoples and the outside world... Dependency theorists also lambasted 1950s and 1960s pro-market "modernization" theorists for the ethnocentric view that the spread of cash around the world was a sign of progress. They preferred to think of cash exchanges as part of a rapelike penetration by the centers of the world economy, or the "metropolis" into the "periphery."

[35] It was likely not a coincidence that development of the North was a high priority during this time, and this perspective supported a strong and dominant political and economic agenda.

approaches to culture change experienced broad popularity in describing the state of Indigenous populations in the North (Chance 1960, 1965, 1966, 1970, 1984; Graburn 1969; Hippler 1969; Hobart 1981; Honigman and Honigman 1965, 1970; McElroy 1973, 1975, 1977; Milan 1964; Pelto 1973, 1975; Sonnenfeld 1957; Tanner 1979; Vanstone 1962, 1965). Its popularity prompted one observer to remark:

> ...No matter what the condition of Indian society is when analyzed by the anthropologist, it is always somewhere along the acculturation path, headed toward full acculturation. Because acculturation explains everything, it explains nothing (Jorgenson 1971: 68).

Proponents of this model argued that the traditional Native economy was a thing of the past; and economic development of any kind was critical to the continued viability of the North, since Native culture was essentially moribund (cf. Chance 1960, 1965, 1966; Hippler 1969; Hobart 1981; Milan 1964). For the most part, anthropologists have generally rejected the ideas implicit in the modernization arguments, particularly that of the 'passive victim' (Nash 1981). That is not to say that there are not anthropologists who continue to argue this anachronistic line of thought (Chance 1984, 1987, 1990; Young 1992), but it is generally recognized to be of little utility.

As with other theories of culture change grouped together under the rubric of modernization, these models all contain several flaws. The most glaring problem is that they are only descriptive and predictive; hence they lack analytical utility. They tell how culture change is occurring, and predict that it will occur; but offer little in the way of analysis of similarities and differences between different cultures' response to change. Change is presented as inevitable, but the factors (assuming there are any) responsible for that inevitability are not examined. The notion or idea that the Indigenous system could utilize, change, or incorporate aspects of the 'dominant' system is never a part of the equation. Thus, these theories of change are essentially evolutionary theories of social development rather than a model of culture change. In general, as Hoben (1982) and Nash (1981) both illustrate, anthropological and ethnographic inquiry has successfully challenged the basic assumptions of modernization and world systems theories.

Probably the best known and most often referenced model of hunter-gatherer economic and culture change is Murphy and Steward's (1956) "Tappers and Trappers: Parallel Process in Acculturation." Grounded firmly in the acculturation model, this seminal article has served as the rationale for countless descriptions of or predictions for culture change. Murphy and Steward compare economic and resultant cultural change among two Indigenous groups: the Mundurucu of South America and the Montagnais of North America. The latter were heavily involved in the fur trade, and the former were involved in the rubber trade. With increasing participation in market economies, Murphy and Steward claimed, would come the demise of Native subsistence and culture.

Murphy and Steward predicted that with increasing involvement in the Euro-American market economy, through commercializing resource extractive activities, the Mundurucu and the Montagnais would develop insatiable desires for European trade goods.[36] As a result of the seemingly unlimited appetites for industrially produced goods, effort would then go into production for exchange rather than for consumption. Naturally, the end result would be the death of production for subsistence, complete dependence on European trade goods, and the functional decimation of Native society. In sum, Murphy and Steward (1956: 353) predicted that:

> When the people of an unstratified native society barter wild products found in extensive distribution and obtained through individual effort, the structure of the native cultures will be destroyed, and the final culmination will be a culture-type characterized by individual families having delimited rights to marketable resources and linked to the larger nations through trading centers.

A clear distinction is made between a mercantile, barter economy and one in which exchange is based on cash. The distinction, it seems, rests on the nature of the transaction, and that of the transactor. Specifically, where cash transactions are the rule, the impersonality of money allows the producer choice as with whom he will deal. Conversely, in the case of the mercantile, barter economy, all transactions are based on a personal relationship between the transactors. The producer produces for the trader, who in turn obligates the producer through extending credit. Ultimately, the "debtor-producer is selling his future production, and the creditor will not extend payment unless assured of delivery... (Murphy and Steward 1956: 348). It is well to add that the question of choice, as portrayed by Murphy and Steward (and later Burkhalter and Murphy (1989)) is dubious. It is true that the producers have choice in a theoretical sense. However, the nature of the transaction and transactors are variable, as is the actual and perceived "value" of cash and the commodities or services exchanged. While examples exist which support Murphy and Stewards' argument (cf. Nietschmann 1973), many more exist which defy or at least call into question the dire predictions for indigenous culture put forth by Murphy and Steward.

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[36] Murphy and Steward refer to trade goods as "... the utilitarian wares and trinkets of civilization." (1956:337)

In direct response to the type of analysis offered by Murphy and Steward, as typified by Bohannon, Sahlins (1968) provides an alternative interpretation of hunter-gatherer economies. Rather than arguing for hunter-gatherers wholesale adoption of the maximization principle, (which is essentially the point argued by Murphy and Steward), Sahlins (1968: 85) offers an alternative, "Zen" course:

> ...By common understanding an affluent society is one in which all the people's wants are easily satisfied; and though we are pleased to consider this happy condition the unique achievement of industrial civilization, a better case can be made for hunters and gatherers, even many of the marginal ones spared to ethnography. For wants are easily satisfied, either by producing much or desiring little, and there are accordingly, two possible roads to affluence. The Galbraithean course makes assumptions particularly appropriate to market economies, that man's wants are great, not to say infinite, whereas his means are limited, although improveable. Thus the gap between means and ends can eventually be narrowed by industrial productivity, at least to the extent that "urgent" goods became abundant. But there is also a Zen solution to scarcity and affluence, beginning from premises opposite from our own, that human material ends are few and finite and technical means unchanging but on the whole adequate. Adopting the Zen strategy, people can enjoy an unparalleled material plenty, though perhaps only a low standard of living. That, I think, describes the hunters...

In contrast to the evolutionary or acculturative paradigm, the model offered by Sahlins forwards the idea that hunter-gatherers are actors, and *play a role in deciding* their economic, political, and cultural fate. Unilineal change and decimation of Indigenous economy and culture is not inevitable. On the contrary, Sahlins argues, hunter-gatherers choose from among a set of options that includes more than following a linear path to mainstream absorption. While it is likely that the range of options available to contemporary hunter-gatherers are more complex than those offered by Sahlins, his emphasis on the importance of choice, and the ability of hunter-gatherers to, in a sense, choose their fate, is important to understanding contemporary hunter-gatherer economies and the role of cash thereof.

Building on Sahlins' paradigm, Peterson (1991b) also dismisses the unilineal or evolutionary model of culture change as inappropriate to the study of hunter-gatherers. Arguing for their continued viability, Peterson (1991b: 14) contends that it is the ability of hunter-gatherers to mold external forces to their own purposes that provides for their continued survival:

> But it is clear...that peoples' practices are much more resilient and persistent than this classic view would lead one to expect and that they can assimilate cash and commoditisation to their *internal purposes*. Alternatively in many situations they respond to them in new and creative ways that blunt or transform the secularizing potentialities. *(emphasis added)*

Similarly, Von Volker (1993: 785) argues that:

> ...there exists strong evidence that societies with a hunting and gathering tradition have a dynamic adaptive potential that enables them to resist the destructive powers of the world system....

Lee (1992) also rejects the lineal model of social change. Paralleling Sahlins, he (Lee 1992: 39-40) argues for socially constructed and maintained parameters within which hunter-gatherers (unconsciously) function economically:

> .... Such societies operate within the confines of a metaphorical ceiling and floor: a ceiling above which one may not accumulate wealth and power and below which one may not sink. These limits on both aggrandizement and destitution are maintained by powerful social mechanisms known as leveling devices (Lee 1990: 242-245). Such societies therefore have social and political resources of their own and are not just sitting ducks waiting to adopt the first hierarchical model that comes along....

Lee's characterization of hunter-gatherers being limited by what he terms leveling devices may not be entirely accurate, but his notion of them as not being "sitting ducks" in the face of change is important.

While their characterization of hunter-gatherer economies is somewhat different, both Peterson and Lee, building on Sahlins, challenge the assumption that cash is an agent of change. Also challenging that notion is Sansom (1988: 159), who, in working with Australian Aborigines living in urban centers, finds that:

> The modality for exchange, which Aborigines promote in the fringe camps of Darwin and in camps of that city's hinterland, is no new creation. Handed down through generations, the modality is a heritage preserved intact. Hence I deal with cultural continuities in a world of material change. Furthermore, the Aborigines I know are well acquainted with whitefella notions that govern the use of cash, promote the work ethic and turn labour into a creature of the market.... The alternative reality persists because Aborigines resist the colonisation of their world by the ideas that ordinarily attach to general purpose money.

Sansom essentially argues that resistance to what he refers to as "monetization of the mind" by Australian Aborigines is a conscious choice, and it is by this choice that they remain culturally and economically disparate from mainstream society. Whereas Lee and Peterson would both likely attribute this separateness to hunter-gatherer's ability to maintain their pre-contact social relations of production intact,[37] Sansom argues a different point altogether.

Rather than emphasizing unconscious choice as a mechanism to maintain group status, Sansom examines how people think about and deal with the resources available to them. He challenges the assumption that external or western associations with and understanding of money (e.g., that it has a standardized value) are brought into the Indigenous system. Sansom shows that in fact money is internalized differently within the Indigenous system; that is, when cash enters the Indigenous system, it enters an alternative reality which is defined by the possessors of that reality.

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[37] Towards this end, Sollaway and Lee (1990: 111) argue:

> [W]e need to examine our assumptions about the transformative power of the commodity -- the view that when a society is linked to another by trade or tribute that linkage will necessarily transform social organization and create dependency. Are there outcomes possible in which exchange relations do not undermine existing relations of production?

Similarly, Peterson (1991a: 82) states:

> The case for arguing that some aboriginal people are reasonably described as hunter-gatherers is based on the evidence that they are still reproducing sets of values and social relations that structure distribution and consumption, and to a lesser extent production, in distinctive ways that are much closer to the pre-colonial pattern than they are to the structure and workings of the mainstream economy. These differences include aspects of sharing, consumption, gender roles, attitudes to accumulation, egalitarianism, and the continuing significance of kinship.

My Argument

Taking off from Sansom, and borrowing from Sahlins, I explore the idea of hunter-gatherers making conscious choices. I argue, like Sansom, that emic notions of cash are far different than etic perceptions.[38] Once in the system (regardless of how it got there), cash is a resource like any other resource. The value of the resource is conditioned by its history; its availability at that point in time; for what the resource can and will be exchanged (which, because of a lack of standardized value, is not always the same); and pre-existing rules and concepts of exchange which are culture bound by kinship, politics, and religion. Refusal to "monetize the mind" creates an alternate reality which can only be understood by recognizing the importance of choice.

I argue that cash has a different place in the study communities than it does in non-rural, western communities. Rather than comprising a separate sector which intersects subsistence by subsidizing capitalization costs and expenses alone, I argue that cash is one of many resources in the economic system. The economic system is not a dual system nor is it a single system comprised of separate sectors, as has been widely argued. Instead, as

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[38] The emic/etic distinction is somewhat of a hazy one for many anthropologists, and as such has generated some debate (Harris 1980; Headland, et al. 1990). Originally coined by Pike (1967) the terms etic and emic come from their linguistic cousins phonetic and phonemic. According to Pike (1967: 37), "... The etic viewpoint studies behavior as from outside of a particular system, and as an essential initial approach to an alien system. The emic viewpoint results from studying behavior as from inside the system. Further, Pike (1967:38) suggests that "... Emic descriptions provide an internal view, with criteria chosen from inside the system... Similarly, Bodley (1997: 16) defines emic as "cultural meanings derived from inside a given culture and presumed to be unique to that culture." Likewise, etic is defined as "cultural meanings as translated for cross-cultural comparison." For the purposes of this discussion, the emic perspective thus refers to that held by the Deg hi'tan and Doy hi'tan.

Wenzel (1989: 4) argues, the distinction between market and subsistence sectors may be flawed:

> ...Economic analyses of contemporary Inuit ecological activities have, by and large, continued a misleading distinction begun in the late 1950s and early 1960s (Wilmott 1961) between a subsistence and a market sector.

Bodenhorn (1988: 173) concurs, pointing out that:

> ...Until recently, most discussion about economic relations in rural, indigenous Alaska has been couched in terms of "dual economies." People refer to a subsistence economy (in which money does not play a central role) and a "cash" economy" (in which people work and exchange their services and goods for money) as if they were two different entities. As an economic model this is misleading. It does not acknowledge the degree to which the two systems today have incorporated elements of each other: cash becomes part of subsistence when used to purchase hunting equipment as well as to pay the fuel bill; subsistence enters the market place when people catch and dry fish, make sleds, makes ulus, sew parkas or sew walrus skins for an umiaq in exchange for money.

While Bodenhorn maintains that two systems are in operation, her argument in fact points to the existence of one system. The degree to which the cash and subsistence systems have "incorporated elements of each other" is not the issue if the system is treated as a whole; that is, if, as Bodenhorn claims, subsistence and cash are operating in the same sphere, then are they not functionally part of the same system? If, as I point out, cash is utilized in the context of subsistence as one of many resources, can it not be conceptually the same as all other resources? In that case, the economic system is not comprised of two separate systems; but rather it is a single system characterized by both money and harvests. As is noted by Lonner (1986: 21), "... cash is only one medium of exchange among many: food, clothing, gas, equipment, services..." Both cash and harvests operate in the same realm and are subject to the same rules, the same treatments, and the same biases. To use Peterson's (1991b) terminology, cash is "internalized" differently. Thus, while cash can (and I would argue often does), as Sansom (1988: 159) indicates, retain its market function while in the Indigenous system, the dollar .... "is a thing both transformed and ambivalent..." in the Indigenous economy. To put it simply, money and food and hunting and other capital are joint economic resources in the same system. As Wenzel (1985) claimes for the Baffin Island Inuit, "....cash has become as fully a part of the resource environment as food or other natural raw materials..."

In resisting "monetization of the mind" (Sansom 1988: 159), Alaskan Athabascans function in an economic paradigm that is fundamentally different than that underlying capitalism. Like Sansom's treatise concerning Australian Aborigines, I argue that hunter-gatherers in rural Alaska have adapted cash and wage labor to their lifestyle, rather than their having assimilated into a capitalistic model. This perspective is supported by Wenzel (1989: 4-6), who makes the following observation of the economy of the Inuit of Baffin Island:

> ... Cash became an intermediate necessary for the capitalization, operation, and maintenance of the imported equipment that now replaced traditional harvesting outfit. Moreover, money also took on the quality of a strategic resource because of 1) the escalating costs of these new artifacts and 2) fluctuations in the value of Inuit produced wildlife products in North American and European markets...*Money was, by the 1970s, a critical resource in the Inuit subsistence system* (emphasis added).

It is important to note that I examine the role of cash only after it has entered into the system: I do not discuss the source of the cash or the way it is brought into the system. This is not to say that the source of cash is not important; on the contrary, it deserves attention since it may be a determining variable in the extent to which internal dynamics direct the economic system (cf. Asch 1982a; Langdon 1991; Myers 1988; Wenzel 1995). Strategies utilized by people to get cash are complex, and are as patterned as are strategies utilized for resource gathering and harvesting. Likewise, taboos, rituals, and luck undoubtedly come to play. As is noted by Langdon (1991: 272):

> ... it is possible that the *source* of cash is a significant determiner of the degree to which subsistence activities can be maintained and a mixed, subsistence-based economy persist.

Nonetheless, for the purposes of this discussion, I am concerned only with the role and dynamics of cash once it has entered into the system.

To address the question of cash as one of many joint resources, the study is organized as follows. Chapter Two provides a discussion of methodology. Chapter Three provides a description and discussion of the environment, language, history, and culture of the study area. Chapter Four provides discussion and analysis of contemporary realities of the four communities-- including a discussion of demography and how it relates to use of resources, and an overview of the economy and subsistence. Chapter Five continues the discussion of economy, provides an in-depth discussion of the resources utilized (resources equals land, animals, and cash), and offers some ideas on the notion of cash as a resource. Chapter Six provides a discussion of patterns of land and resource use, and the seasonal nature of such activity. Chapter Seven discusses differing perspectives on resource management, and on the very resources that are managed. Utilizing the emic/etic distinction discussed previously, I then discuss western and emic perceptions of cash. Finally, Chapter Eight provides the conclusions and a discussion of the meanings and ramifications of this study.

CHAPTER TWO:
Methodology

Introduction

Most of the quantitative data for this project were collected as part of a year-long study of the subsistence harvest and use of resources by the residents of the four lower Yukon River communities of Grayling, Anvik, Shageluk, and Holy Cross. The catalyst for the original project, as discussed below, was a cooperative agreement between Tanana Chiefs Conference (TCC), a regional Tribal consortium of 43 villages, and the Department of the Interior, specifically the United States Fish and Wildlife Service (USFWS).

The goal of the original project, as outlined in the cooperative agreement, was to gather data primarily on wild resource use by members of the four communities. One aspect of the data collection was geared towards the cash "sector" of the economy, specifically:

> .... to describe the cash *sector* of the economy including employment opportunities, an estimation of the cost of living and other economic household characteristics (such as the extent of participation in wage employment, sources of cash and gross income) and an analysis of the relationships of these to harvest activities (emphasis added)

It was this question, and the data resulting from it, that gave rise to this dissertation. I have long been interested in the relationship between cash and subsistence; and felt that existing models, while perhaps sufficient in explaining the phenomena in some areas, did not always apply to the situations with which I was familiar. Use of the term "sector" to describe cash in subsistence economies implies that cash and subsistence are separate entities, and subject to separate analysis. As discussed in this dissertation, this can be a flawed distinction. Nonehteless, this paradigm for examining cash and wild resource use is widespread; its use in the Cooperative Agreement is illustrative of it having permeated the world view of many people and agencies.

My employment at the time, with the Tanana Chiefs Conference (TCC), afforded a unique opportunity to explore the question of the relationship between cash and subsistence. As a regional non-profit corporation, TCC is in the position of administering health and social services programs-- and in dealing with subsistence use of wild resources from a policy perspective. My experience in the subsistence arena consists of over ten years in the academic, political, and practical considerations of subsistence practice and policy. As will become evident as my argument unfolds, my experience informs my argument. This thesis is developed as a result of the type of data collected, and the need to analyze this information as a constituent body, rather than as a separate etic category.

Data collection methods included limited direct observation and informal interviews combined with systematic interviews with almost all households[39] in the four communities. The interview schedule was developed by a team of individuals, coordinated by the author. (Any mistakes in the interview schedule, the author takes as her own). Land use mapping was also used in data collection, both to gather map information and to elicit additional information on geographic, political, and social aspects of resource use.

The period of original field work began in September 1991, and ran through September 1992. Other interviews occurred in the following two year period. In addition to field work, information on the area was collected through extensive review of published and unpublished materials on the economy, history, and culture of the lower Yukon River area. In addition to the above, my personal experience and employment over the course of the past ten years have all contributed to this dissertation. My employment with several different Native organizations over the past ten years has afforded me a unique perspective from which to look at cash as a resource within the greater subsistence economy.

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[39] It should be noted that "household" is an arbitrary measure, commonly (but rarely accurately) employed by agencies in trying to elicit information. As used in this study, "household" includes all family and non-family that stay in the household most of the time. Households can be and typically are fairly fluid, however, and it should be recognized that the households recognized for use in this study are not necessarily unchanging entities. Though loose, it was felt that this definition accurately describes a household.

Setting

The communities of Grayling, Anvik, Shageluk, and Holy Cross are located in the southwest portion of the state (Map 1). In contrast to most of the other villages in the region, for whom Fairbanks is the nearest city, the closest major city for the four villages is Anchorage, which is roughly 380 miles to the southeast. Fairbanks is approximately 420 miles to the northeast. Grayling, Anvik, and Holy Cross are located on the west bank of the Yukon River and Shageluk is located on a tributary of the Yukon, the Innoko River. Other tributaries of importance to the four communities include Paimiut and Shageluk Sloughs, and Bonasila, Yetna, Anvik, Itidarod and Atchuelinguk Rivers. In addition, creeks, lakes and ponds also are utilized by village residents. As might be expected, the Yukon River and its tributaries provide a major focus for resource harvesting activities, in addition to providing year-round transportation routes.

The four communities are located in the southernmost portion of the Doyon Regional Corporation land (Map 2). One of thirteen profit corporations originally established as a result of the Alaska Native Claims Settlement Act (ANCSA), Doyon, Ltd. is the largest land holder of the profit corporations. Tanana Chiefs Conference, Inc. is responsible for the delivery of health and social services to the region.[40] Covering roughly one-third of the state, Doyon lands include the Yukon River drainage from Holy Cross upstream to the Canadian border, and the Kuskokwim River drainage north of Stony River. Numerous federal public lands fall within Doyon Region, including the Innoko National Wildlife Refuge;[41] Denali National Park and Preserve; Yukon-Charley

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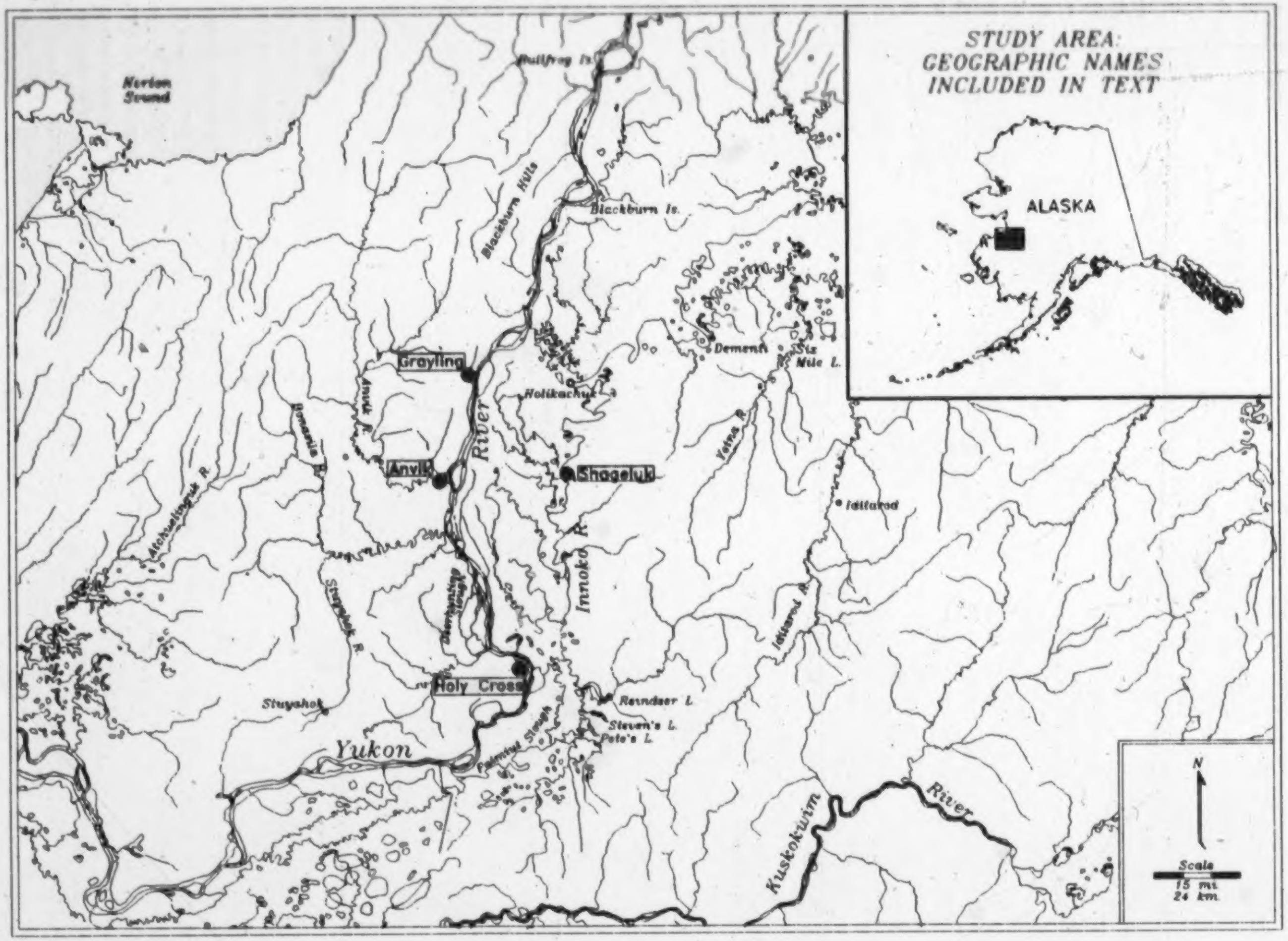
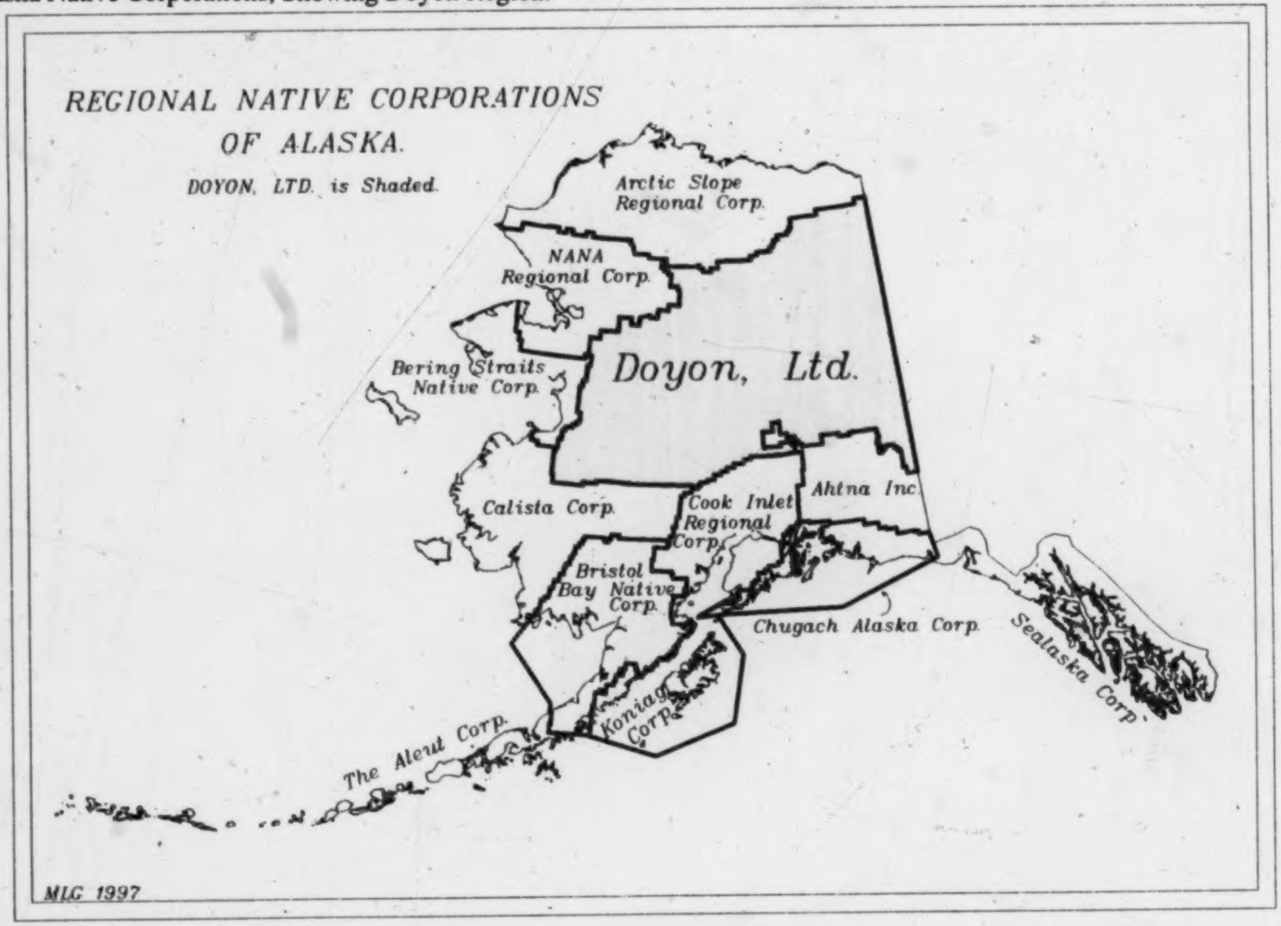
[40] At the time of this study, this was the case. Since then, however, Tribal entities in Alaska have initiated the process of "compacting," which allows Tribal entities to deal directly with the service provider (i.e., BIA or Indian Health Service) and receive their proportion of monies. Since the time of data collection, many Tribal groups have pulled out of the Tanana Chiefs Conference; and are now providing their own health and social services.

[41] Consisting of roughly 3.8 million acres of land, the refuge is in immediate proximity to the four villages and is of vital importance to residents' resource harvesting activities. The Innoko Refuge provides year round access to subsistence fish and game resources. While for federal agencies and Native corporations the study area represents numerous "management units," (for further discussion on management units see chapters 6 and 7) it is the traditional and historic arena for the subsistence pursuits of the four communities.

Map 1. Study Area.


STUDY AREA:
GEOGRAPHIC NAMES
INCLUDED IN TEXT
ALASKA
Norton Sound
Bullfrog Is.
Blackburn Hills
Blackburn Is.
Grayling
Anvik
Anvik R.
Bonasila R.
Atchuelinguk R.
Holikachuk
Shageluk
Dementi
Six Mile L.
Yetna R.
Iditarod
Innoko R.
Iditarod R.
Stuyahok R.
Stuyahok
Holy Cross
Yukon
River
Reindeer L.
Steven's L.
Pete's L.
Paimiut Slough
Kuskokwim
River
N
Scale
15 mi.
24 km.

Map 2. Alaska Native Corporations, Showing Doyon Region.


REGIONAL NATIVE CORPORATIONS
OF ALASKA.
DOYON, LTD. is Shaded.
Arctic Slope Regional Corp.
NANA Regional Corp.
Bering Straits Native Corp.
Doyon, Ltd.
Calista Corp.
Cook Inlet Regional Corp.
Ahtna Inc.
Bristol Bay Native Corp.
Chugach Alaska Corp.
Sealaska Corp.
Koniag Corp.
The Aleut Corp.
MLG 1997

Rivers National Preserve; Steese Conservation Area; White Mountains Recreation Area; Arctic, Innoko, Kanuti, Koyukuk, Nowitna, Tetlin, and Yukon Flats national wildlife refuges. In addition, a large portion of the utility corridor for the Trans-Alaska Pipeline lies within these lands. Other lands lying within the Doyon region include federal general domain lands, Native allotments, and Native townsite lands as well as other private lands..

In general, most of the area is remote; and, depending on the season, accessible only by airplane, boat, or snowmachine. The majority of the population in all of these villages is Alaska Native, specifically Athabascan. In addition, Holy Cross has a sizeable Kuskokwim River Yup'ik population. A small segment of the population in each of the four villages is non-Native. Appendix A provides population data for the Doyon Corporation villages.

The Project:

As mentioned, at the time the original project was conducted, I was employed by the Tanana Chiefs Conference, a Tribal consortium comprised of 43 villages in interior Alaska. While at Tanana Chiefs Conference, I held the positions of Senior Researcher and Deputy Director of Wildlife and Parks. In these two capacities I developed and directed the subsistence research efforts for the region. The project for which some of these data were collected was negotiated under Section 809 of the Alaska National Interests Lands Conservation Act (ANILCA).[42] Under Section 809, the Secretary of the Interior is permitted to negotiate cooperative agreements with eligible persons and organizations, which include "... other federal, agencies, the state, Native Corporations, other appropriate persons and organizations, and, acting through the Secretary, other nations..." (ANILCA, Sec. 809).

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[42] Since 1990, the Federal government has managed subsistence hunting, trapping and fishing on federal public lands in Alaska. Title VIII of Alaska National Interest Lands Conservation Act (ANILCA) recognizes "subsistence" as the customary and traditional uses of fish and wildlife resources by Alaska's rural residents for food, clothing, shelter, and handicrafts. The law establishes a priority for these uses over others, such as sport hunting and fishing, in national wildlife refuges, national parks, national forests, and other Federal public lands. The law was Congress' response to not having dealt with hunting and fishing rights in ANCSA. As one observer astutely noted:

> We must never forget that subsistence is a Native issue, the form of the preference in federal law may be rural, but if the only people living in rural Alaska had been a few thousand non-Native homesteaders, miners and modern-day sourdoughs, there never would have been any title VIII of ANILCA. It was enacted for the protection of Natives. They are what this is all about (Alaska Natives Commission 1994: 11).

As originally negotiated, the cooperative agreement (see Appendix B) consisted of three separate activities, all of which were intended to provide information and technical support to the Federal Subsistence program.[43] Activity One consisted of determining the subsistence uses of fish and wildlife resources by residents of the communities of Grayling, Anvik, Shageluk, and Holy Cross. Activity Two consisted of monitoring subsistence caribou harvests for three communities. Activity Three consisted of supplying recommendations to the Federal Subsistence Board to assist their regulatory process in rural Alaska.

The purpose of the initial project was to provide specific and complete information concerning the number and species of animals harvested and seasonality of harvest, for the period September 1990 through August 1991, by residents of the four communities. The project had the following objectives:

1. to provide a detailed description of the seasonal harvest of fish and wildlife utilized by the residents of Grayling, Anvik, Shageluk, and Holy Cross.

2. to estimate, for a twelve month period, quantities of fish and wildlife harvested and the level of participation by household.

3. to describe the cash *sector* of the economy including employment opportunities, an estimation of the cost of living, and other economic household characteristics (such as the extent of participation in wage employment, sources of cash and gross income); and an analysis of the relationships of these to harvest activities.

4. to describe resource distribution and exchange, to include the kinds of fish and wildlife resources most frequently shared, the distribution of harvests between each

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[43] The U.S. Fish and Wildlife Service has lead responsibility in the interagency Federal subsistence management program. The Office of Subsistence Management provides primary staff support to the Federal Subsistence Board, which sets regulations for subsistence hunting, trapping and fishing on federal public lands. This support extends to ten regional subsistence advisory councils, which provide recommendations to the Board on all matters relating to subsistence. The staff also helps refuge managers meet subsistence objectives on national wildlife refuges as well as providing specialized assistance to land managers in the other Federal land management agencies.

of the four communities and the surrounding communities, and the extent of involvement of households in distribution networks.

5. to identify sub-populations within each of the four communities; and their differing patterns of fish and wildlife resources resource use, and socioeconomic characteristics.

6. to update maps of harvest areas.

7. to describe competition with other user groups in the harvest of fish and wildlife.

It is important to note that only one part of this study was dictated by the provisions of the cooperative agreement. While many of the data were collected under the umbrella of the cooperative agreement, additional data were collected following its completion. The majority of the data collected following completion of the cooperative agreement was qualitative, since the survey instrument provided substantial quantitative information. Additional qualitative data were necessary to add dimension to the numbers.

This dissertation began to take shape long after the original data were tabulated and the project report written for the United States Fish and Wildlife Service (Wheeler 1993b); though the project provided the catalyst for this study. As I examined the quantitative data more fully, and spoke to more people regarding their ideas on cash, the central question--namely, how do people consider cash in the local economy-- began to emerge. The more I spoke with people about this idea, the more people encouraged me to pursue this line of thought. I should add that my interest in exploring emic ideas of cash in the context of subsistence was stimulated in part by what I perceive to be the discomfort with which many people, anthropologists chief among them, address cash in subsistence economies. It seems to me that most people who have conducted any research among contemporary hunter-gatherers have some questions, if not angst, concerning the role and place of cash in contemporary hunter-gatherer economies. Perhaps it is because cash seems not to "fit" in subsistence.[44] Perhaps it is due to the permeation of the ideas articulated by Murphy and

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[44] In both the public and academic arenas, cash and subsistence are an uncomfortable match. In both arenas, the underlying premise is that if, and when, people have the opportunity to participate fully in

Steward (1956) almost five decades ago; namely that with cash and commoditization of resources comes cultural demise. I don't know. What I do know, after having worked through this question, is that outsiders are far more uncomfortable with the idea of cash in subsistence economies than are the people using the cash within the economy. And that, perhaps, is the crux of my argument.

Procedures

In September 1991, public meetings were held in Anvik, Holy Cross, and Shageluk in association and coordination with the Traditional Council or Indian Reorganization Act (IRA) council of each village.[45] At the meetings, the proposed project was introduced and discussed at length. Following significant discussion of the nature of the study, the proposed data collection methods, local involvement, and safeguards for confidentiality of the information once it was collected,[46] the project was endorsed by all four villages and approval for and support of the project was obtained.

All households in the four communities were contacted separately about participation in the project. Prior to initiation of the project and throughout its course,

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wage labor or the market economy, subsistence practices will fall by the wayside. The sentiment that 'people can't go back to how it used to be' is in evidence everywhere, particularly in public and economic policy directed at rural areas.

Another corollary theme which is often part of the subsistence debate is the idea that people making above a certain amount of money should not be "eligible" for subsistence. Thus many rural, primarily Alaska Native people are caught in a paradox: on the one hand subsistence is a moribund way of life and people only do it for lack of any other options, on the other, if they make too much money (or are "overly successful in the capitalist realm) then they shouldn't be "eligible" for subsistence. The idea of subsistence as purely an economic phenomenon has begun to carry some weight, even among Native people. This may be a case of the politically powerful providing the vocabulary in which the debate will be framed (cf. Morrow and Hensel 1992).

[45] While all four communities are second class cities, each with a mayor, their internal political structure varies slightly. Grayling and Shageluk are organized under tribal or Bureau of Indian Affairs (BIA) recognized Indian Reorganization Act (IRA) councils known as Organized Village of Grayling and Shageluk Native Village, respectively. Anvik and Holy Cross are organized as Traditional councils (also recognized by the BIA), and referred to as Anvik Village and Holy Cross Village. Consistent with their organization, each village has an elected or appointed chief.

[46] Confidentiality is almost always an issue for studies of this type which collect information on resource harvest and use. Because this study was conducted with public moneys, the data are, of necessity, public information. However, the data can be configured to obscure the identity of the individual. Data can be presented as an amalgam of the community. In the case of this study, every possible safeguard was taken to protect the identity of individual households.

people and households were given the opportunity to decline participation. Informal interviews occurred throughout and subsequent to the project, in many different contexts. Mapping sessions were publicized in advance; and were generally open to anyone, although specific individuals were solicited for their participation.

Survey Instrument

A ten-page survey form was used to collect quantitative information in a systemic fashion during the household interviews. It was designed to elicit detailed information on subsistence resource use by all members of the household (Appendix C). The survey form was designed by a team of individuals, only one of whom (the author) was a trained social scientist. The form was designed with the research objectives and purposes of the cooperative agreement in mind. It was the desire of all on the team to develop a form that would accurately reflect emic perceptions of resource use, (thus the seasonal approach), and to phrase questions using categories which held meaning for local people, so as to be more 'user friendly.' It was also the desire of the author to develop a survey form that could be easily coded so that data could be entered easily. Thus, with the exception of the last five questions, the questions on the survey form were close-ended and pre-coded.

The first part of the ten-page survey focused on the members of the household: questions focused on age and gender of household members; participation in wage labor; estimated annual household income; participation by all household members in hunting, fishing, gathering, and trapping; and sharing of resources gained through those activities. The majority of the following questions focused on the seasonality, target species, age and sex of the animals, and quantity harvested. Thirty-one different animals, fish, and plants were listed specifically in the survey; and space was given for animals, plants, and fish not listed. Certain animals and fish were placed together (e.g., ptarmigan and grouse comprise one category, as do all salmon species), because local people felt that it was not important to separate them out.[47] Two questions focused on the cash costs of subsistence equipment and supplies. Five more questions tried to elicit local input on the optimal hunting seasons for moose and caribou, levels of availability of game, and possible explanations thereof. Finally, the last five questions provided an opportunity for people to express their opinion on a variety of topics having to do with fish and game resources and their management. Responses to these questions were open-ended.

Surveys were conducted with participating households in all four communities during September-December 1991. Prior to interviews being conducted, the author provided an in-depth training session in methods and techniques of interviewing using a survey form to a member of each community who had been hired as a research assistant. Following the training sessions, the author accompanied each research assistant/interviewer on several interviews to assess their abilities, and provide additional 'hands on' training. Three of the four research assistants had worked with and been trained by the U.S. Bureau of Census, (a factor in their hiring). Local people hired to conduct interviews, sometimes but not always worked in the company of the principal investigator, for several reasons. First, training opportunities are always important; and local people expressed interest in gaining the benefits of training. Also, few opportunities exist for local employment, so it was important to provide some opportunity. Finally, interviewers were chosen for their understanding of the subject of subsistence.

Interviewers contacted all household members; and if possible, interviewed them at the same time. Most interviews took place in the interviewee's home, and lasted from twenty minutes to several hours. Length of the interview depended largely on the number of people in the household who hunted, fished, and gathered as well as on personal and time constraints.

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[47] Not separating out species of salmon, or even commercially caught from subsistence caught salmon, proved to make the analysis more difficult.

A total of 136 household resource use surveys were conducted, including 41 households in Grayling, 32 in Shageluk, 24 in Anvik, and 39 in Holy Cross. The survey tallied information on 480 persons living in the households. Data were extrapolated to reflect 1990 census figures. Table 1 provides the total population compared with the sample population. As the table indicates, the survey gathered information on roughly 76 percent of the population in the four communities.

Table 1. Total Population and Sample Population, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.

Community	Sample Population	Total Population*	% of Total
Grayling	178	204	87
Anvik	75	82	92
Shageluk	99	139	71
Holy Cross	128	203	63
Total	480	628	76

* Based on 1990 Census (United States Department of Commerce 1990)

The chosen sampling method was opportunistic sampling: the goal of the research project was to interview all of the households in each of the four villages. Given the short duration of the interview period, as mandated by the time frame outlined in the Cooperative Agreement, a number of households were not represented for a variety of reasons (e.g., members were not in the community at the time of the survey, or they chose not to participate). Of the 45 households contacted in Holy Cross, 6 (13%) chose not to respond; 8 (20%) of 40 declined to participate in Shageluk; 4 (10%) of 40 households did not participate in Grayling; and all 24 households in Anvik participated in the survey in Anvik.

In addition to data collection through the survey form, informal interviews were conducted throughout and subsequent to the duration of the study by the author. Topics covered all of those in the survey form, and many others, ranging from gambling to religion to local and state politics to employment options and issues. Because the focus of the study was on resources, most informal discussions and interviews tended to cover issues relating to the procurement, use, and harvest of resources. In addition, considerable effort was directed at eliciting local perceptions of cash. Informal interviews were conducted during the entire study period (September 1991 - September 1992) and following the completion of the project, interviews continued through September 1994.

Finally, in addition to the above described information, sources providing information on population, employment, transfer payments, and housing were reviewed. Information from the U.S. Census, the Alaska State Data Center, the Alaska Department of Health and Social Services, The Alaska Department of Community and Regional Affairs and the Bureau of Economic Analysis all provided information helpful to the analysis in this report.

Mapping

Information on land use and settlement patterns was gathered using several methods. Contemporary use areas were recorded during a portion of the interviews. As outlined in the research objectives, mapping was an important component of the research. Base map information was provided by maps developed in 1984 by personnel from the Division of Subsistence, Department of Fish and Game who had recorded some resource use on maps (Alaska Department of Fish and Game, Division of Subsistence, Preliminary Fish and Wildlife Resource Use Maps, 1984).

Hunting, trapping, fishing, and gathering areas used by the residents of Grayling, Anvik, Shageluk, and Holy Cross for the past 20 years were recorded. Information was gathered using mylar overlays and 1:250,000 United States Geological Survey (USGS) maps: use areas were outlined on the mylar. In each community, residents used colored markers to outline specific resource use areas. Consistent use of colors for specific resources was uniform in all communities. In this way, the geographic areas used for moose hunting, bear hunting, furbearer trapping, salmon and non-salmon fishing, migratory waterfowl hunting, berry picking, and wood gathering were noted on the maps during the interview process.

Mapping sessions were conducted with individuals or groups of individuals ranging in size from two to five people. Sessions were informal, with the maps developing as the dialogue progressed. Overall, a total of 41 local people actively helped in development of the maps. Following their initial development, maps were reviewed by members and the Chiefs of the four communities. Desired changes were made, and the maps were approved in May 1992.

To convert the field data from the community mapping phase, specific coordinates were noted on each mylar transparency. The transparencies were then digitized, creating a file for each community, with separate layers for each resource. To maintain the integrity of the field data, colors for each resource represented on the digitized maps are consistent with the colors used in the original maps. Once digitized, the data was converted into the UTM system (meters), and projected for UTM zone 4. By creating a base map from USGS 1:2,000,000-scale Digital Line Graph (DLG) data;[48] and importing the digitized field maps, the accuracy of the field data, particularly with regard to location and area size, was maintained.[49]

All mapping was completed using AutoCad r. 12, with AutoCad data extension. The total area utilized for harvesting each resource was determined through an internal program which provided data in square meters, which was then converted to square kilometers. Since the conversion of the field data to the maps was accomplished digitally, retaining spatial and location information, data concerning specific resource harvest areas and their sizes is extremely accurate. However, the information concerning land mass utilized for specific resources should be viewed as approximate, since general areas of resource harvest were obtained through fieldwork interviews as opposed to visits to the sites of resource use.

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[48] Hydrology in the DLG files for the area used in the maps was 1:1,000,000-scale.

[49] Spatial coordinates, represented as polygons, for each resource use area.

Data Analysis

After completion of the household survey interviews and notation of collected information into the survey forms, variables (or "labels") were assigned to all close-ended survey items.[50] The survey instruments had already been organized in such a manner that would permit analysis. The data were coded and transferred onto paper, and strings of data were subsequently entered into the computer. The variables ("labels") and values ("codes") were entered into a fixed format ASCII File. The data were subsequently screened, cleaned, and finalized as an SPSS/PC+ system; and descriptive statistics were prepared.

In addition, responses to open-ended questions were recorded and compiled. Finally, all interviews were transcribed and compiled. While some interviews were taped, many were not. Typically I reconstructed the discussion based on notes taken during the interview. This technique was largely due to my (and my perception of local peoples') discomfort with tape recorders, not to mention the logistical awkwardness of using tape recorders.

Previous Research

Because of their proximity to the Yukon River, the historical residents of the area experienced European contact as early as the late eighteenth and early nineteenth centuries. As the first Europeans into the area, the Russians were well established by the mid-1800s (Oswalt 1962; Vanstone 1978, 1979a; Zagoskin 1967[1847]). First Glazunov in 1833-1834, followed by Malakhov and Kolmakhov in the later 1830s, and later Zagoskin in 1842-1844, traveled through the area and provided variable accounts of the people (Osgood

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[50] A coding scheme was created whereby 0 = no, 1 = 2, no answer = 9, for all variables having a discrete number of responses on the survey instrument.

1940; Oswalt 1962; Vanstone 1978, 1979a, 1979b; Zagoskin 1967[1847]). During the latter half of the 1800s the area experienced a myriad of explorers, miners, and travelers, many of whom provided accounts of the area and its people (Dall 1870; Nelson 1887; Petroff 1900; Whymper 1869). While Glazunov provided the first account of the people of the area, E.W. Nelson (traveling on behalf of the Smithsonian Museum) provided the first extensive and well documented account of the way of life of the people of the area. A survey and review of contact history is provided in chapter four.

In the late 1880s, missionary activity in the area rapidly increased. In 1887, an Episcopalian mission was founded at Anvik. Shortly after, in the spring of 1888, a Roman Catholic mission was established at Holy Cross. The Episcopal mission closed its doors in the 1950s, and the Catholic mission functions today in a limited capacity. Nonetheless, in both cases the effects of these missions continue to be felt throughout the area.

John Chapman, co-founder of the Episcopal mission and a resident of the area for forty years, collected extensive information on the people of the area, particularly information on folklore and religion (1903, 1906, 1913, 1948). This information stands as the earliest detailed description of the area. Elsie Clews Parsons, an anthropologist, worked at Anvik briefly around 1920 (Parsons 1921-22).

Ales Hrdlicka (1930, 1943) conducted limited archaeological work in the area in 1926 and again in 1929. While his primary objective was to collect skeletal material for the U.S. National Museum, he also collected ethnographic information and located a number of archaeological sites (Hrdlicka 1930, 1943, 1979a; in Vanstone 1979b). His descriptions provided a starting point for later archaeological work. During the summer of 1935, Frederica de Laguna conducted extensive archaeological reconnaissance in the area. Her work included an inventory of many sites on the Tanana and Yukon River Valleys between Nenana and Holy Cross (1936a, 1936b, 1947). De Laguna's accounts were primarily prehistorical, and included only very basic accounts of the present populations and their traditional way of life (Vanstone 1979b). Further archaeological work was conducted in the late 1970s and early 1980s (Andrews and Koutsky 1977; Arundale 1983; Ganley 1987).

Cornelius Osgood conducted the first and only extensive ethnographic account of the people of the area. On the basis of his work in Anvik during the summers of 1934 and 1937, Osgood produced three volumes covering the material (1940), social (1958), and mental (1959) culture of the peoples of this area. VanStone (1979b: 18) claims that "...Together the three studies constitute the most comprehensive account of any northern Athabaskan peoples."

Osgood's work continues to be the only comprehensive anthropological work on the Lower Yukon people. Oswalt (1962, 1973) and VanStone (1979a, 1979b) have conducted ethnohistorical research on the area, and Kari (1981, 1978, 1987) has produced several Native language dictionaries. In addition, an environmental impact statement (EIS) for the Innoko Refuge produced by the federal government provides a compilation of information for the area (United States Department of the Interior 1987). A more recent study provides a compilation of economic statistics for the area (Geier, et al. 1995). Finally, the Alaska Department of Fish and Game, Division of Subsistence has some unpublished data concerning resource use in the area; and the Division of Commercial Fisheries conducts commercial salmon counts every year, and publishes them as part of a statewide effort (Alaska Department of Fish and Game Division of Commercial Fisheries 1992).

Conclusion

While past research in the area concentrated on archaeological and ethnological inquiry, it was not until this study began that focus was brought to bear on the resources of the region and how people utilize them in a contemporary context. The research of Hrdlicka, De Laguna, and Osgood is typical of their period since it attempted to reconstruct past settlement patterns, and provide a picture of pre-contact or proto-historic life in the Yukon and Kuskokwim rivers. A similar approach characterized the work of Oswalt and VanStone, to whom a great debt is owed for their persistence in bringing historical sources to light that describe the changes of the late 19th and early 20th centuries.

The relatively recent focus on resource and subsistence studies arose primarily due to a need to quantify resources that are an ongoing cause of conflict between various user groups, among them commercial and sport fishermen (typically visitors to the area) and subsistence users-- the residents of the river drainages. These reports, focusing solely on commercial fishing harvests, borrow from a model which separates subsistence from commercial fishing, and sport from both commercial and subsistence. While useful for the information they contain on commercial fishing activity in the region, they do not discuss the type of information provided in this study. The EIS produced by the federal government is essentially a compilation of existing information, and contains no new information. Similarly, the economic profile developed for the area is again a compilation of existing information, borrowed largely from state and federal census efforts and the original report written by this author in fulfillment of obligations for the cooperative agreement.

In addition to providing a different approach through which to examine cash as a resource in a subsistence economy, this study provides a wealth of information on contemporary resource use by the residents of Grayling, Anvik, Shageluk, and Holy Cross which has not otherwise been available. The residents of the four communities had previously refused permission to allow the state of Alaska to conduct resource harvest and use studies in the area. This research was conducted only because the residents were comfortable with the work being conducted by the Tanana Chiefs Conference. By using a survey form developed by community residents, resident interviewers, and resource mapping, in addition to the standard anthropological techniques of participant observation and in-depth interviews, I attempted to broaden my approach better to address the emic categorization and perception of cash. It is my hope that in so doing, I have at least in part, accomplished my goal.

CHAPTER THREE:
Deg Hi'tan and Doy hi'tan: Environment, Language, Culture, and History

Introduction

The majority of the population in the communities of Grayling, Anvik, Shageluk and Holy Cross is *Deg hi'tan* and *Doy hi'tan* Athabascan. Also referred to as Ingalik and Holikachuk,[51] Deg hi'tan and Doy hi'tan are two of eleven distinct Athabascan groups in Alaska.[52] The geographic area utilized by the Deg hi'tan and Doy hi'tan; and discussed in this dissertation includes the lower portion of the Yukon River from below the village of Kaltag to below Holy Cross; the Innoko River, from Blackburn Creek and Holikachuk Slough to below Holy Cross; part of the Anvik River; and all or parts of the Innoko National Wildlife Refuge (refer to Map 1). This area roughly encompasses the subsistence resource use area of the contemporary residents of Grayling, Anvik, Shageluk, and Holy Cross, as will be discussed in chapters five and six. Subsequent to discussing the aspects of the cultural setting which include language, history, and culture, I first discuss aspects of the natural setting, including the physical environment, the climate, and flora and fauna.

Natural Environment

Physical

The geographical area utilized by the Deg Hi'tan and Doy hi'tan lies within the transitional zone between the Eskimoan and Hudsonian biotic province (Dice 1943; Oswalt 1967). In general, the area is characterized by many and varied waterways, all of which are part of the Yukon or Kuskokwim River systems; together these rivers form an extensive lowland area.

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[51] The term Holikachuk is tied to historic place names (cf. Vanstone 1978, 1979a, 1979b, Zagoskin 1967[1847]).

[52] The other nine Alaskan Athabaskan groups include Ahtna, Dena'ina, Koyukon, Upper Kuskokwim, Tanana, Upper Tanana, Tanacross, Gwich'in, and Han. See Krauss (1982) or VanStone (1974) for further information.

While higher ground dominates parts of this region, waterways predominate, a point illustrated by Wahrhaftig (1965: 30) who provides the following description of the general topography of the area:

> The Innoko Lowlands are a group of flat river flood plains, dendridic in pattern, whose bounding slopes are generally steep banks cut into the surrounding hill; in places, however, gentle silt-covered slopes merge with the surrounding hills... The Yukon River and a large tributary, the Innoko river, cross the lowlands. The main part of the lowlands has a complex intersecting network of meandering sloughs of these two streams.

These waterways not only provide transportation routes in winter and in summer, they are home to the numerous and varied faunal and aquatic resources which are indigenous to this area.

The Yukon river flows south from its confluence with the Tanana past Grayling, Anvik, and Holy Cross. Shortly after Holy Cross the Yukon makes a turn towards the west, and thereafter flows through Yup'ik country and down into the ocean. The locally important tributary of the Yukon River, the Innoko River, flows for approximately 500 miles from its headwaters south of Cloudy Mountain and meets with the Yukon about 1.5 miles east of Holy Cross. The Anvik river, another locally important waterway, heads north west of Anvik; and flows southeast for approximately 140 miles to join the Yukon about 1.5 miles north of Anvik and 36 miles north of Holy Cross. Shageluk Slough meanders north to south for close to 40 miles between the Yukon and Innoko Rivers, and the Holikachuk Slough joins the Shageluk Slough and the Innoko River. Numerous other waterways are found throughout the study region, but those already mentioned are the major transportation networks.

The river systems of this region create an extensive wetlands area which is the predominant topographical feature of the study area. The lowlands are characterized by extensive willow and limited poplar growth; and in higher areas tundra and barren country covered with small shrubs, lichens, sedges, grasses and weeds, and mosses can be found (Osgood 1940: 33-34). White spruce, paper birch, and quaking aspen predominate on the better drained soils and south-facing slopes. Balsam poplar (cottonwood), along with thick stands of willow and alder predominate on the active flood plains. The poorly drained soils and the north-facing slopes are generally home to black spruce; and contain the usual tundra vegetation of sedges, mosses, and low growing shrubs. Also common in the area are alder, willow, rose, Labrador tea, wild rhubarb, and blueberries, cranberries (high and low bush), salmonberries, and rosehips.

Climate

In general, the study area is characterized by a continental subarctic climate (Darbyshire and Associates 1984a, 1984b, 1984c, 1984d; Selkregg 1976). There is discernible climatic variation depending on the locale in question; the highland areas to the east and the north are generally cooler in the summer and warmer in the winter, and the lowland areas are typically warmer in the summer and colder in the winter. As with much of Alaska, this area is characterized by seasonal extremes in both temperature and daylight. On December 21, the winter equinox, this area receives less than four hours of sunlight a day; during this time the river valleys become cold sinks, and the temperature falls well below zero degrees Fahrenheit. In the highlands during these times warmer air predominates. In contrast, the summer is characterized by extensive daylight (more than 20 hours on the summer solstice) and concomitant warm temperatures.

As can be expected, temperature range is extreme for this area, running from a low of -62 F. to a high of +93 F. in Holy Cross (Darbyshire and Associates 1984a, 1984b, 1984c, 1984d; Selkregg 1976). Highest recorded temperatures for Grayling, Anvik, and Shageluk are 87, 87 and 80 F, respectively. Snowfall averages 110 inches in Grayling, Anvik, and Shageluk, and Holy Cross measures in at slightly less, with a recorded average of 79.4 inches. On average, Grayling, Anvik, and Shageluk receive 21 inches of precipitation; and Holy Cross receives slightly less, 19 inches, annually.

Breakup and freezeup, the two most dramatic seasonal events in this area, tend to occur between April 15 and May 15, and September 15 and October 15 respectively. The average number of frost-free days for this area is approximately 105 (Selkregg 1976).

Flora and Fauna

As with all hunters and gatherers, the Deg Hi'tan and Doy Hi'tan utilize a broad range of plant and animal resources.[53] Because resources are generally available seasonally, dependence on any given resources varies with its availability. As was true historically (Vanstone 1974), fish are an extremely important resource although small mammals and ungulates are also important to the Deg Hi'tan and Doy H'itan .

Moose *(q'iyh dihon or gitthing' chux)* are found throughout the region. The extensive flooding and fires which occur to a greater or lesser extent encourages willow growth, a well known winter food for moose. Caribou (*ggagg or ghinoy)* are far less prevalent than moose. While caribou have been abundant in recent history, their population is diminished at present.[54] Black bear (*sris/nili'ey/gichidl)* and brown bear (*iliy ggagg or gegha)* are also found in the region.

Though this focus is at least partially a historical development, this area is particularly well known for its furbearers, both for the quantity and quality of certain species, particularly marten (*gitsighiy/gitsighiye)* and beaver (*noya').* Other furbearer species include muskrat *(vichingadh)*, wolf (*nik'ighun/nigighun)*, wolverine (*niltreth)*, land otter (*xiyix tredh)*, silver otter (*xiyix tredh*), lynx (*nodog/giq'inodoy)*, mink (*tixgedr/tevoniy)*, red fox (*niq'asrt'ay)*, cross fox *(vidandizriy/vigidanditth'odl)*, weasel

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[53] A listing of the common, Deg hi'tan and biological names of all of the resources found in the Grayling, Anvik, Shageluk, Holy Cross area is in Appendix D. This discussion addresses only the commonly utilized resources in the area, providing both the English common name and the Deg hi'tan term for the resource.

[54] The cycles for this migratory animal are not yet completely understood. In the past few years, caribou migrations have been extremely erratic both in terms of where they have gone, and when they have gone. Suffice it to say, when they are present, they are utilized.

(nevay), and hare *(ggux/noghiniy)*. Porcupine *(srix tl'ot ggagg/ggaggi tlagg)* are also present.

The Innoko lowlands area features a wide variety of fish. Broad whitefish (*tilay*), round whitefish *(xilting')*, and humpback whitefish *(q'ontoggiy)* are the most important to subsistence harvest. In addition, northern pike *(giliqoy)*, burbot *(gidhit)*, sheefish (*sresr*), Arctic grayling *(sdat'an/srixno' legg)*, and char *(vithye legg)* are also taken. Chum salmon *(nalay)* are taken primarily for commercial purposes. King *(ggath)* and silver salmon *(lighan)* are available in limited numbers.

The Yukon and Kuskokwim river basins are prime migratory waterfowl nesting areas. Species include Canada goose *(dits'in/vidhal zring)*, white-fronted goose (*gidot'aq)*, black brant (*novogh higidits'in*), mallard *(viqidithiq'izr)*, goldeneye (*taxilding*), pintail *(gidrangidh/gidrongedh)*, green-winged teal *(honhdzighudl)*, and northern pintail *(gidrangidh/gidrongedh)*. In addition to these migratory species, ruffed grouse *(gidilning/gitthid)*, spruce grouse *(q'ivaldal/diyh)*, and willow ptarmigan *(q'iyaldal)* are also present.

As previously mentioned, the moderate to extreme flooding typical of this area encourages abundant willow *(tr'itl)* growth. In addition, balsam poplar *(t'ighith)*, paper birch *(q'iy/q'iyh)*, tamarak (*tot'ighiddh/git'ighizingiz*), and white spruce *(didlang/ts'ivi)* are present in the area.

Numerous edible plants are found and utilized throughout this area. Edible berry species include bog or lowbush cranberry *(nenhtl'it)*, highbush cranberry *(ginathdloy/dinathdloy/tr'onihay)*, bog blueberry *(nilyagh)*, and salmon or cloud berry *(dondhi'on)*. Edible plants include rose hips (*xisrghed*), Indian potato *(xathdloy)*, wild celery (*dichiyedim*), wild onion (*xudini'gheg*), wild rhubarb (*xoltthil*), and sour dock (*xoltthil k'idz*).

Cultural Setting

Alaskan Athabascan Language

As previously mentioned, residents of the area are predominantly Deg hi'tan and Doy hi'tan Athabascan, two of eleven distinct Athabascan groups in Alaska. Other Alaska Native groups include Yup'ik, Siberian Yup'ik, Inupiat, Aleut, Tlingit, Eyak, Haida, and Tsimshian. Athabascans primarily inhabit the interior of Alaska (commonly referred to simply as the 'Interior').

Each of the eleven Athabascan groups maintain a separate language and culture. Figure 1 provides a schematic diagram of the Athabascan-Eyak-Tlingit, or Na-dene language family. Differences between the northern Athabascan languages vary depending largely on the geographic distances between them (Krauss 1982). For example, because Deg hi'tan and Doy Hi'tan are adjacent, differences in the language are of a dialectical nature. In contrast, Koyukon and Gwich'in are as different as French is from Spanish.[55] Deg hi'tan or Ingalik is recognized as a distinct Athabascan language with slight internal dialectical differences (Kari 1991). It was not until the 1960s that Krauss of the Alaska Native Language Center, "rediscovered" that Doy hi'tan is a different language from Deg hi'tan (Krauss 1991; 1992; Snow 1981). Since then, the term Holikachuk has been used by linguists to differentiate Doy hi'tan (Krauss 1991).

In the early 1980s Krauss (1982, 1981) estimated that fewer than 80 people (of an estimated population of 300) spoke Deg Hi'tan, or Ingalik, and fewer than 20 (of an estimated population of 150) spoke Doy Hi'tan or Holikachuk. Today, English is the dominant language.

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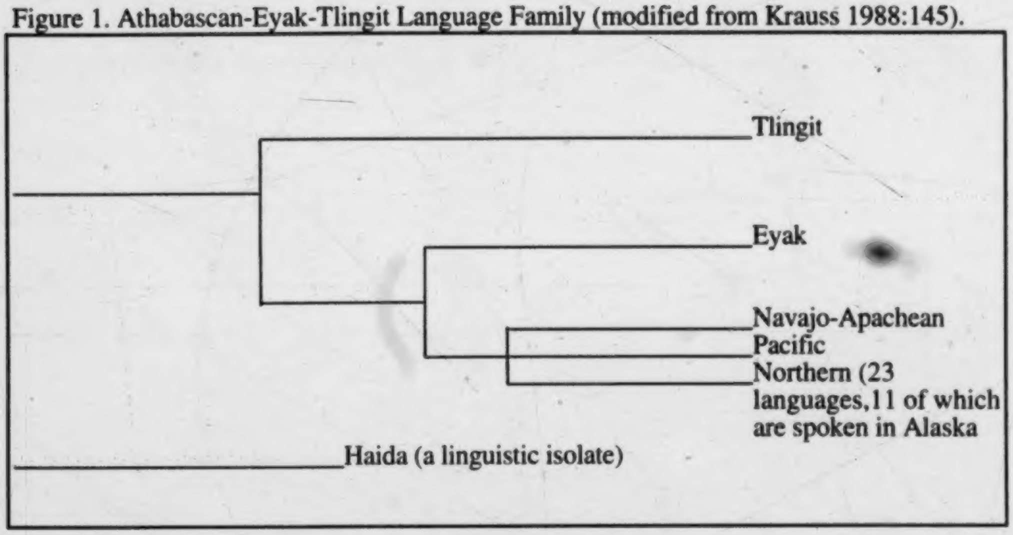
[55] Pers. comm. Krauss 1992.

Figure 1. Athabascan-Eyak-Tlingit Language Family (modified from Krauss 1988:145).


Tlingit
Eyak
Navajo-Apachean
Pacific
Northern (23 languages,11 of which are spoken in Alaska
Haida (a linguistic isolate)

The People- An Overview

What is true of language can also be said of culture: differences are often slight; and it is sometimes difficult to establish distinct boundaries between named socio-territorial groupings of Alaskan Athabascans (Helm 1968; Helm, et al. 1971; Helm and Leacock 1971; McKennan 1969a, 1969b; Osgood 1936a; Vanstone and Goddard 1981; Vanstone 1974, 1988). VanStone (1974: 8) provides the following analysis of the unique situation characteristic of Alaskan Athabascans:

> Northern Athabaskan culture has been described as consisting not of a series of neat cultural entities, but rather a cultural continuum carried on by a series of interlocking groups whose individual lifeways differed only in certain minor details from those of their immediate neighbors. Such minor variations were observable only when they had built up into more significant differences, usually over considerable geographic distance.

In light of Vanstone's claims, and given the long term historic geographic proximity of Deg hi'tan and Doy hi'tan Athabascans, it is not surprising that the differences between the two groups are more of degree than of kind. While the Doy hi'tan and Deg hi'tan were recognized as being separate groups fairly early on by Glazunov (Chapman 1913: 1;

Vanstone 1959: 44; Zagoskin 1967[1847]), during the latter nineteenth and first half of the twentieth century, they were not treated as a separate group, but rather as a subgroup of either the Koyukon or Deg hi'tan (de Laguna 1947; Oswalt 1962; 1979a; Vanstone 1979b; Zagoskin 1967[1847]).

Historically, inhabitants of the area were settled in areas depending on resource availability and proximity (Osgood 1940, 1958, 1959; Vanstone 1979a, 1979b). Extent of site utilization changed through time, although archaeological sites in the vicinity of the four communities indicate long term historical use (de Laguna 1936a, 1947; Ganley 1987; Helm, et al. 1971; Hrdlicka 1930, 1943; Oswalt 1973; Vanstone 1979a, 1979b). As is true of most small communities in rural Alaska, development of these four stable, permanent communities is a relatively recent phenomena.

Historically, Athabascans, especially those not depending upon relatively stable resources such as salmon or whitefish runs, tended to be highly mobile. Osgood (1940, 1958) described Ingalik as having a home base-winter camp, at which people spent the majority of time. People traveled from the winter camp to the spring and summer camps. To borrow Vanstone's (1974: 40-41) terminology, the Ingalik and Holikachuk could best be characterized as being central-based wanderers. Vanstone (1974: 42) characterizes the 'typical' Ingalik settlement pattern as follows:

> The availability of predictable runs of salmon each summer gave a measure of stability to the way of life... The Ingalik of the lower Yukon, for example, occupied winter villages from August to May and then moved to their summer fish camps. Summer villages or camps, were usually close to good fishing places and often not far from the winter villages... The Ingalik relied heavily on summer fishing and their absences from winter villages for hunting were usually of short duration unless elaborate, cooperative caribou hunting was involved. For these specialized fishermen, winter could be a time of relative leisure when elaborate ceremonies were held in the kashim.

With the advent of trading posts, missionary settlements, and later forced schooling in this century, settlement patterns gradually became more centralized. Often associated with increased centralization is reduced mobility and increased sedentism. It is important to note that people generally retain a high degree of mobility in spite of more permanent settlement patterns. Travel within and outside of the area is possible by airplane year round, snow machine in winter, and boats in summer. People generally take advantage of the waterways to visit and travel, much as they did historically. This pattern is typical of much of rural Alaska.

History

Demographic Overview

In general, population estimates provided by early travelers and explorers tended to be low. Historic population undercounts were most commonly tied to the census taker failing to consider the high rate of mobility of the extant populations, the seasonality of various settlements, the extent of areas utilized, and the dispersal of people at various times of year. With increasing traffic in the Lower Yukon area, greater centralization as a result of the fur trade and wage labor, and the advent of the census takers remaining in the area for longer periods of time, census counts grew more accurate.

As previously mentioned, the epidemics which occurred with increasing frequency through the 19th and into the 20th century were responsible for tremendous population decimation (Fortuine 1985). Epidemics occurred with increasing frequency, beginning with the 1838-1839 smallpox epidemic which was reported to have wiped out over half of the Kuskowagmiut (Kuskokwim River Yup'ik) population (Fortuine 1985: 119; Osgood 1940: 480; Vanstone 1979a, 1979b: 59; Zagoskin 1967[1847]). Damage to the Deg hi'tan population was not thought to be as devastating as to the Kuskowagmiut, although the population of the Anvik-Shageluk area dropped by roughly one-third, according to estimates made by Glazunov in 1833, and nine years later by Zagoskin in 1844 (Osgood 1940; Vanstone 1959; Zagoskin 1967[1847]). By the end of the nineteenth century, another series of epidemics occurred throughout the Interior (Fortuine 1985; Vanstone 1979b). The combination of measles, smallpox, whooping cough, and influenza is thought to have wiped out at least half of the existing population (Fortuine 1985; Osgood

1940; Vanstone 1979b). Vanstone (1979b: 229) estimates that between 1900 and 1914, diseases accounted for a 20 percent decline in the resident population. The 1918-1919 influenza epidemic struck the lower Yukon area, as it did most other areas in the territories. While its effects were felt in the lower Yukon area, particularly as it followed on the tail of several other epidemics, it was not as deadly as it was in other areas (i.e., parts of the Seward Peninsula (cf. Ganley, n.d.; Wolfe 1982). Historic population counts can be useful in determining population at the time of contact. They also serve as a deadly reminder of the impact of European-introduced diseases.

An additional factor resulting in the often inaccurate (and typically underestimated) population counts is the high mobility characterizing the Deg hi'tan and Doy hi'tan both historically and contemporarily. Historically, the high rate of mobility of the Deg hi'tan and Doy hi'tan was usually tied to the seasonal availability of resources; by the turn of the nineteenth century, wage labor (e.g. commercial fishing, woodcutting, and commercial fur trade) were also responsible for their mobility (Osgood 1936a, 1940, 1959; Oswalt 1962; Petroff 1900). Contemporarily, this mobility is typically tied to the use of fish and game resources, as well as to wage employment, educational and training opportunities, and health and medical care (Wheeler 1991). As a result of this high rate of mobility, both historic and contemporary population counts may not be accurate, particularly if the counts are based on a one or two day trip to a settlement.

With these issues in mind, Table 2 provides a review of reported populations of different settlements in the area of Grayling, Anvik, Shageluk and Holy Cross, from the years 1833 to 1940. The population figures are taken from accounts of explorers, travelers, miners and government workers, and church and mission records (Chapman 1906, 1913; Loyens 1966; Nelson 1887; Orth 1971; Osgood 1936b, 1940, 1958; Petroff 1900; Rollins 1978; Vanstone 1959, 1978, 1979b; Whymper 1869; Zagoskin 1967[1847]).

Table 2. Deg hi'tan and Doy hi'tan Population Estimates, 1833-1940.

Date	Settlement or Area	Population	Source
1833-1834	Anvik, Makki (Bonasila), Anilukhtakpak (Holy Cross), Kolmakov	1,000	Glazunov
1842-44	Anvig Village	120	Zagoskin
1842-1844	Anilukhtakpak (Holy Cross)	170	Zagoskin
1842-1844	Makki (Bonasila), Kolmakovskiy	699	Zagoskin
1842-1844	Tie'goshshitno (Shageluk)	45	Zagoskin
1842-1844	Khuligichagat (Holikachuk)	70	Zagoskin
1880	Chageluk	150	Petroff
1880	Askomute (Holy Cross?)	30	Petroff
1880	Anvik, Makki, Napamiut (Koserefsky), Anilukhtakpak	451	Petroff
1880	Lower Yukon/ Innoko Area	413	10th Federal Census
1890	Lower Yukon/Innoko Area	476	11th Federal Census
1890	Lower Yukon/Innoko Area	382	Porter
1898	Anvik, Anvik River, Bonasila Shageluk, Shageluk Slough, neighboring villages	652	Chapman
1900	Grayling	75	Cantwell
1900	Anvik, Anvik River, Bonasila Shageluk, Shageluk Slough, neighboring villages	565	Chapman
1914	Anvik, Anvik River, Bonasila Shageluk, Shageluk Slough, neighboring villages	452	Chapman
1920	Anvik	140	Rollins
1920	Shageluk	130	Rollins
1930	Anvik, Anvik River, Bonasila Shageluk, Shageluk Slough, neighboring villages	440	Chapman
1930	AnvikVillage	79	Rollins
1930	Holy Cross Village	337	Rollins
1930	Shageluk	88	Rollins
1940	Anvik	110	Rollins
1940	Holy Cross	226	Rollins
1940	Holikachuk	77	Rollins
1940	Shageluk	92	Rollins

Early Exploration and Historic Contact

As described by Glazunov (Vanstone 1959) and Zagoskin (1967[1847]), the earliest accounts of non-Native forays into the area were by Russian explorers. Explorations were motivated by a desire for control on the part of the Russian-American Company and later the Russian Orthodox Church. The latter wanted people's souls, in name if not in belief; and the former desired control over trade.

In 1833, the Russian-American Company established a base near the mouth of the Yukon known as Mikhailovskiy Redoubt. The purpose of establishing this base was, in large part, to provide a starting point for explorations into the Interior. It was thought that through exploration, friendly ties could be established with the indigenous inhabitants; and the emphasis in trade would lean towards the Russians (Vanstone 1959, 1979b: 43-58). To encourage this idea, Glazunov, an employee of the Russian-American company, liberally distributed trade goods when he came in contact with indigenous inhabitants. This practice was later frowned upon by Zagoskin (1967[1847]), who believed that this practice encouraged poor trading habits.

Roughly a year after the establishment of Mikhailovskiy Redoubt, and following several successful exploratory trips in and around the Yukon Delta region, Glazunov made his way overland from Norton Sound to the headwaters of the Anvik River and down to its confluence with the Yukon (Vanstone 1959, 1979b: 49). From there he went on to visit at least five Deg hi'tan settlements, including Anvik, Makki (Bonasila), Anilukhtakpak[56] (Holy Cross), and Kolmakov (Osgood 1940: 480). During his travels Glazunov recorded his interactions and perceptions of the indigenous people he contacted, thus providing the first ethnographic account of the Deg hi'tan (Osgood 1940: 43-45; Vanstone 1959, 1979b: 52-55).

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[56] Because of the proximity to the Kuskokwim River Yup'ik, many of the place names utilized in the area at different points in time were of Yup'ik origin. This is likely one of them.

Glazunov was replaced by the Russian-American company in 1837, reportedly due to his failure to navigate the Unalakleet River in an attempt to ascertain a route to the upper Yukon (Andrews and Koutsky 1977; Vanstone 1979b). Glazunov's replacement, Malakhov (also an employee of the Russian- American Company) ventured further into the Interior; and established a trading post at Nulato (Zagoskin 1967[1847]). Subsequently, he descended the Yukon to its mouth, visiting settlements along the way. While Malakhov's explorations were undoubtedly important both to the Russian-American Company and in terms of Indigenous- Euroamerican trade relations, he provided little in the way of ethnographic information on the Deg hi'tan.

Subsequent to Malakhov, Kolmakov (also a Russian trader) traveled to the Deg hi'tan area, apparently descending the Innoko River in search of an efficient portage (essentially a short cut) to the Yukon River. However, his travels occurred during the spring on 1839, coinciding with the 1838-1839 smallpox epidemic and massacre at the post at Ikogmiut (Zagoskin 1967[1847]). As a result, Kolmakov's travels appear to have been short-lived.

Like Glazunov, Malakhov's and Kolmakov's travels were stimulated by the desire of the Russian-American Company to control the Indigenous fur trade in the Interior (Vanstone 1979b: 43- 62). To accomplish this goal, the Russians needed to master the Indigenous trade routes, particularly the shortcuts, which spanned the entire Interior (Vanstone 1979b: 56, 88- 89; Zagoskin 1967[1847]).

By the late 1830s to early 1840s, the Russian-American Company was cognizant of the tremendous indigenous trade networks existing throughout the Interior (Andrews and Koutsky 1977; Van Baal 1975; Vanstone 1979b: 63- 79, 88, 90; Zagoskin 1967[1847]). They speculated that by breaking into the already existing networks, and establishing themselves as middlemen, they could dominate both Indigenous and European trade throughout Alaska (Andrews and Koutsky 1977; Helm, et al. 1971). They were not prepared for the hostility with which many indigenous inhabitants of the land would receive their 'market plan' (Loyens 1966). Numerous forts, Nulato and Ikogmiut, for example, were burned down and their occupants killed (Vanstone 1979b: 58; Wright 1995; Zagoskin 1967[1847]). While historical accounts vary as to why these forts were destroyed by local people, the unwanted coercion in trade, and the introduction of diseases stimulating disastrous epidemics, had to have played a significant role.[57] Another possible motive for this aggression was the displacement of Native groups who had profited in their place as middlemen in the Interior trade.

The first of many epidemics hit the Lower Yukon and Innoko River areas in 1838-1839 (Fortuine 1985: 119; Vanstone 1979b: 58-60). It is estimated that roughly 50 percent of the Yup'ik people of the Kuskokwim River were killed by this epidemic (Fortuine 1985: 119; Osgood 1940: 481; Vanstone 1979b: 60; Zagoskin 1967[1847]).

Several years after Kolmakov's explorations, the well known naval lieutenant Lavrentiy Zagoskin[58] explored the Interior from 1842-1844 (Fortuine 1985; Osgood 1940; Vanstone 1979b; Zagoskin 1967[1847]). Zagoskin, too, worked for the Russian-American Company. His predecessors had established the existence of the Yukon, Innoko, and Kuskokwim Rivers. Zagoskin was directed to explore these rivers further, and to "... ascertain the most practical portages between these rivers..." (Vanstone 1978: 4). The first part of his travels focused on finding a shortcut from the Interior to Kotzebue Sound, but the latter year was spent on the aforementioned directive from his superiors. As a result of his travels, Zagoskin found that one could travel from the Yukon river to the Kuskokwim by way of the Innoko River (Vanstone 1979b: 76). Zagoskin spent considerable time with local people, and documented much of the way of life at that time. His accounts continue to stand as the primary source for information on the history, geography, and ethnography of west-central Alaska during the Russian period (Osgood 1940; Vanstone 1979a, 1979b; Zagoskin 1967[1847]).

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[57] Wright (1995) describes the attack on Nulato as a result of primarily indigenous conflict.

[58] There are as yet many unanswered questions about Zagoskin, stemming largely from a concern over whether he made the trips he claimed to have made or based his accounts on second-hand information (Black 1991 pers. comm.).

After Zagoskin's explorations, there was no further attempt on the part of the Russian-American Company to explore the Interior further. The next explorations occurred when the United States acquired Alaska in 1867. At that time, U.S. explorers were already in Alaska as part of the Western Union Telegraph Expedition. They were attempting to survey a route for a telegraph line intended to connect Alaska with Europe via the Bering Sea and Siberia. The accounts resulting from this venture (Dall 1870; Whymper 1869) provide some information on the people of the Lower Yukon and Innoko Rivers.

Some years later, during the later 1870s and early 1880s, E.W. Nelson, a member of the U.S. Signal Service, made several trips to and throughout the Lower Yukon and Innoko River area. His accounts (Nelson 1887; Vanstone 1978) provide ethnographic information on the Deg hi'tan and Doy hi'tan, particularly focusing on the ceremonial life of these people.

While the motivations of these travelers and explorers varied, their relationship with the local people of the area was generally benevolent. The Euroamerican explorers were, more often than not, in the position of having to rely on the good nature of the local people. On numerous occasions, they, or their dogs, were fed, sheltered, and warmed by local people. While many of the accounts were not always complimentary concerning the living conditions of people, almost all of the travelers and explorers were thankful for the care and generosity extended to them (Cantwell 1902; Petroff 1900; Vanstone 1978, 1979a, 1979b; Zagoskin 1967[1847]). At this point the travelers were basically on their own, and while representing different agencies, it is likely that their needs and goals dictated their behavior towards local people.

Missionary Activity

The Lower Yukon and Innoko rivers provided "... a battleground between the Episcopalians at Anvik and the Jesuits at Holy Cross" (Vanstone 1979b: 148). Russian Orthodox missionaries were also a presence since their establishment of an outpost at Ikogmiut in the late 1830s. However, while they enjoyed initial success, by the end of the nineteenth century the Russian Orthodox influence was negligible. Vanstone (1979b: 109) states that "... Throughout the nineteenth century, Russian Orthodox priests continued to travel in the Anvik-Shageluk area in the course of performing their religious duties. There are indications, however, that such trips were increasingly infrequent after 1870." This was undoubtedly due to the establishment and continued presence of the missions at Anvik and Holy Cross.

In 1887 an Episcopalian mission was established at Anvik (Chapman 1903, 1906, 1913; Vanstone 1979a, 1979b). The mission initially was undertaken by the Reverend Octavius Parker and John Chapman. While the former left after several years, the latter lived and worked at the mission until his retirement in 1931.

In 1888, the Roman Catholics began their mission at Holy Cross, after considerable conflict between the two churches (Vanstone 1979a, 1979b). The conflict between the two missions never quite disappeared; while never explicitly stated, merely converting the Indigenous inhabitants was not enough; control of the area by one group or another appeared to be the desired goal (Chapman 1903, 1906, 1913; Vanstone 1979a, 1979b).

Both missions ran boarding schools, and children from up and down the river were actively sought by both the Jesuits and the Episcopalians. In 1891 three nuns from the mission at Holy Cross, bringing several 'samples from their school, made a trip up river to Nulato with the goal of 'recruiting' students for their school. A priest at Holy Cross commented on this trip, stating that "... the result of this expedition was very satisfactory. Twenty children were collected, and these poor little creatures, full of vermin and half naked, were delighted at the prospect of going down to Holy Cross" (Barnum 1893: 36).

While his resources were considerably less than those of the Catholic mission at Holy Cross, Chapman nonetheless strived to increase the attendance at his school. Perhaps because he never came close to the size of the Holy Cross mission (the largest number of students ever recorded at Anvik was 43 (Vanstone 1978, 1979a, 1979b), Chapman seemed to delight in small failures of the Jesuits. Following the above referenced trip by the nuns from Holy Cross, Chapman wrote that "... I have the happiest news to report, as to the failure of the Jesuit missionaries with our people... [they] succeeded in getting only two..."(Chapman 1891).

In addition to recruiting students for their schools, a major effort of both Episcopalian and Jesuit missionaries was the eradication of what they perceived to be a threat to the spiritual health of their respective flocks; the shamans (Vanstone 1979b: 95, 143, 152, 199-201, 214-216). Vanstone (1979b: 95) made the observation that "Shamans and missionaries competed for the welfare of men's bodies as well as their souls." Letters and accounts from both missions indicate that a considerable amount of time and energy was devoted to shamans. Both missions recognized that the shamans held the spiritual power base, and only by eroding that authority would people transfer their belief systems to the church (Vanstone 1979b; Chapman 1906, 1913). It appears that dual belief systems were not even considered by the church.[59]

Another major focus of the intense missionary activity was directed towards the elimination of Native languages. While Chapman learned Deg hi'tan and even translated much of the Bible into Deg hi'tan, the Jesuits made no attempt to learn the Native language spoken at Holy Cross (Vanstone 1979b: 158). Even so, these schools provided the primary vehicle through which Natives were taught to speak English. Thorough this endeavor they were 'civilized' and christianized (Krauss 1991; Vanstone 1979b). The use of English was strongly encouraged, while at the same time use of native language was strongly discouraged. Psychological and physical abuse was often used as a deterrent to discourage the use of native languages (Krauss 1992).

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[59] What occurred was a syncretism of Indigenous and Christian beliefs.

Other efforts through which Natives were Christianized and 'civilized' by missionaries included promoting the wearing of western clothes, living in above-ground houses, and "working" (e.g., gardening and animal husbandry) (Antonson and Hanable 1985; Simeone 1982). The gardens at both Holy Cross and Anvik were a tremendous source of pride to the missionaries. In 1917 a reindeer herd was introduced to the village of Shageluk. While it thrived for a few years, by the mid 1930s there was no trace of it (Vanstone 1979a, 1979b). These efforts, while directed at instilling a Protestant work ethic in the Indigenous people of the area, met with varying levels of success, but had long-lasting impacts .

In spite of internal and external conflicts, the missionary influence appears to have been long-lasting. Osgood, (1940: 44) who worked in the area in the 1930s, reported that by 1940, "... nearly all the Indians were members of a Christian Church." While Osgood may have been correct in asserting this claim, it is unclear if people were members of the church in name only; or if their belief systems were predominantly Christian.

The Turn of the Century To the 1930s

The last decade of the nineteenth century was the start of tremendous change along the Lower Yukon and Innoko Rivers. Not only were the missions becoming more firmly entrenched in both Holy Cross and Anvik, but both human and boat traffic on the Yukon was steadily increasing, largely generated by the search for gold, sporadically fueled by occasional strikes. The influx of local gold seekers spurred the further development of supply centers or trading posts, which were initially established for Lower Yukon and Innoko River peoples' participation in the fur trade. Increasing reliance on supply centers appears to have affected settlement patterns gradually, so that by the early 1900s there was a shift from continual seasonal movement towards semi-permanent villages (Osgood

1940). This trend continued through the twentieth century (Antonson and Hanable 1985; Simeone 1982; Vanstone 1979b).

By the turn of the century, due largely to the efforts of the Alaska Commercial Company, steamboat traffic was well established on the Yukon River, providing an excellent opportunity for local people to become involved in the cash economy by providing firewood for the steamboats (Osgood 1940; Vanstone 1979a, 1979b). Numerous accounts document the increasing sophistication of local people in terms of their trade arrangements (Andrews and Koutsky 1977; Helm, et al. 1971; Vanstone 1979a, 1979b). But this period also marked the time when the inter-cultural relationships began to deteriorate. Abuses on the part of the newcomers towards local people began to be the norm. Newcomers or travelers no longer viewed themselves as being dependent on the good nature of local native people, and relationships between non-Natives and Natives gradually degenerated.

Shortly after the time of Nelson's explorations, gold prospecting became an important economic activity throughout Alaska (Antonson and Hanable 1985). While initially the majority of attention focused on the Klondike, the Lower Yukon and Innoko river area was affected by the traffic and excitement generated by the Klondike, much of which passed by on the Yukon River (United States Department of the Interior 1987; Vanstone 1979b). The period from 1906 through 1912 was one of intense exploration in the Upper Innoko and Itidarod area; little gold was found, and by 1920 only one mining operation (in Itidarod) was still open (United States Department of the Interior 1987). Almost all mining activity in the Innoko area had ceased by this time (Vanstone 1979b: 191).

While little gold was ever taken out of the Innoko area, the effects of gold fever, particularly the Klondike gold rush, on local people were dramatic (Fortuine 1985; Vanstone 1979b: 174-193). The gold rush generated greatly increased traffic and interest in the Yukon River. As a result of this traffic, supply stations sprung up at convenient (to the travelers) locales. Hopeful miners, were typically unprepared for the trip and for the conditions they were to encounter, so they inevitably relied upon local people for many of their supplies, particularly food. Salmon became an important source of protein for miners who often over-wintered in the Innoko area. Caribou and moose also provided an important source of protein. Vanstone (1979b: 183) comments that "...the sale of meat to whites on a large scale may have been a significant factor in the population reduction of both species between 1910 and 1920."

As outsiders traveled to and through the region, tapping animal and human resources, they brought unseen but deadly baggage: epidemic diseases (Fortuine 1985; Wolfe 1982). According to Vanstone (1979b: 224-226):

> ...[T]he years of 1898 through 1901 constituted a period of almost continuous severe illness on the Lower Yukon... Epidemics and other periods of severe illness at Anvik and on the lower Innoko between 1900 and 1914 caused a decline of almost 20 percent in the population

The sickness consisted of epidemics of measles, mumps, whooping cough; and, during 1900-1901, and 1918-1919, influenza (Chapman 1948; Fall 1990; Fortuine 1985). All of the lower Yukon villages were affected by these diseases, often suffering up to 50% population decimation (Vanstone 1979b).

The first third of the twentieth century proved to be a difficult time for the people of the lower Yukon River. Changes occurred with increasing rapidity and impact. Relationships between the Native population and the non-native newcomers began to take a turn for the worse as more and more non-native people were drawn to the area largely for prospecting. Introduced diseases plagued the native people of the area, resulting in significant population loss over time. A gradual shift away from seasonal mobility towards increasing centralization took place.

WWII to Present

By the end of World War II, Alaska was the focus of increasing national attention due to the far-reaching implications of the Cold War, as well as for its recently recognized mineral potential (Antonson and Hanable 1985). At this time, the U.S. Census directed increased effort towards Alaska, largely due to improved communications and transportation (Antonson and Hanable 1985; Williams 1985). As a result, census counts were conducted regularly and with considerable effort (Bosworth 1989). These factors, in conjunction with an increasing trend towards semi-permanent settlement which characterized much of Alaska by the end of the 1940s, contributed to improved population counts throughout rural Alaska (Rollins 1978; Williams 1985).

Improved population counts were not the only changes occurring in Alaska following World War II. Indeed, this was a period of rapid change for most Native people of Alaska. A critical component of this change was the influx of non- natives to the state occurring after WWII. This influx resulted in a drastic population redistribution. In 1929, the native population numbered 29,983, roughly 50 percent of Alaska's total 59,278 population (Williams 1988). By 1939, the native population numbered 32,458, or 45 percent of Alaska's total population of 72,524 (Williams 1988). Following WWII, the non-native population in the state ballooned; and while the Native population continued to grow, it decreased relative to the total population. By 1950, the Alaska native population numbered 33,836, only 26 percent of the State's total population of 128,643 (Williams 1988).

Table 3 provides population counts for Holikachuk, Grayling, Anvik, Shageluk, and Holy Cross between 1950 and 1990 (United States Department of Commerce 1960, 1970, 1980, 1990). The village of Holikachuk was abandoned by 1963; and most, but not all of its residents moved to Grayling at that time.

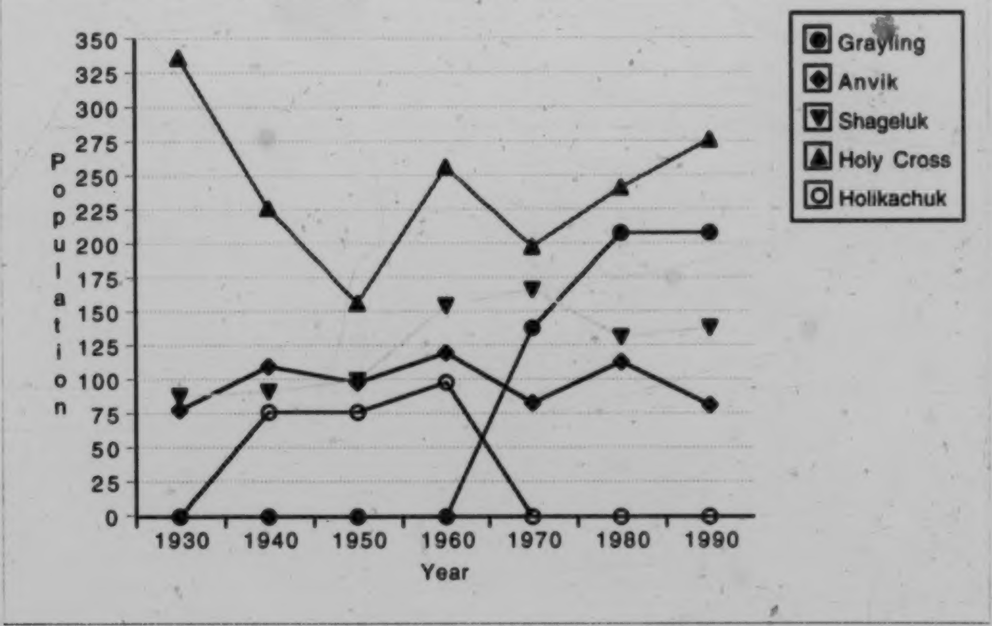
Table 3. Population Data for Holikachuk, Grayling, Anvik, Shageluk, and Holy Cross, 1950-1990.

	1950	1960	1970	1980	1990
Holikachuk	77	98	N/A	N/A	N/A
Grayling	N/A	N/A	139	209	208
Anvik	99	120	83	114	82
Shageluk	100	155	167	131	139
Holy Cross	157	256	199	241	277

N/A = not applicable

Figure 2 provides the population of Grayling, Holikachuk, Anvik, Shageluk, and Holy Cross from 1930 through 1990. Both the table and the figure provide an interesting glimpse of the demographic changes occuring in the area since 1930.

Figure 2. Population Data for Grayling, Holikachuk, Shageluk, Anvik and Holy Cross, 1930-1990.



Holy Cross exhibits the most extreme population fluctuations since 1930, due in large part to the decreased presence of the mission from 1930-1950. The population in

Holy Cross decreased from 337 in 1930 to 226 in 1940. By 1950 the population in Holy Cross had decreased to 157 people; however, by 1960 it had increased to 256 people. The effects of World War II are reflected in the decrease in the population of all four communities from 1940-1950; the decrease was due in part to the outmarriage of many native women to non-native soldiers stationed in Alaska during that time. As well, the common practice of sending tuberculosis patients to Seattle to sanitoria during this time also affected population figures. While Grayling and Holy Cross have experienced population increases since 1970, Anvik and Shageluk have experienced overall population declines during the same time period.

This trend of non-native immigration continues, and is the primary factor in the relative decrease of the native population since 1929 (Williams 1985; 1988). Oil exploration and development which boomed in the 1960s and 1970s contributed significantly to the rapid increase of the non-native population (Haynes and Pedersen 1989). This trend continues to be documented in every census. According to the 1990 census, the native population numbered 85,698, 15.6 percent of the State's total population; *yet the native birthrate is twice that of the non-native birthrate* (United States Department of Commerce 1960, 1970, 1980, 1990; Williams 1988).

According to the 1990 U.S. Census, the population of the State of Alaska was 550,043. Of this total, 76 percent was Caucasian, 15.6 percent was Alaska native, 4 percent was Afro-American, 4 percent Asian and Pacific Islands, and 1 percent "other." Approximately 32.5 percent of the total population was rural (rural is defined by the U.S. Bureau of the Census as communities of less than 1,000 people) (United States Department of Commerce 1990). Roughly 40 percent of the rural population is comprised of Alaska natives, and roughly 50 percent of all Alaska natives live largely in census areas in which natives make up more than one half of the population (United States Department of Commerce 1990). The population composition of all 42 communities in the Doyon Region is shown in Appendix A. As this table illustrates, Alaska natives comprise the minority in only a few communities; while in most of the Doyon region, Alaska natives, specifically Athabascans, comprise the majority population. Alaska natives comprise the majority population in most rural communities, with the exception of some regional centers (Williams 1988).

In addition to the rapid influx of non-Natives following WWII, the presence and impact of government continued to expand. Children were forced to go to school. Parents had to choose between continuing their seasonal movement and placing their children in boarding school, or settling near a school. Settlements grew up around trading posts beginning in the 1920s and 1930s, and by the late 1940s almost all children were enrolled in school (Antonson and Hanable 1985; Simeone 1982). In one generation people changed from leading a life of seasonal movement to one more centralized and village-focused. Many people continued to travel extensively and live off the land for extended periods of time, since seasonal activities and movement continued to be tied to the harvest of wild fish and game (cf. Wheeler 1991). However, the village became a focal point to a much greater degree than it had been in the past.

While small children were educated at the settlements, older children were usually forced to go to BIA or mission-operated boarding schools for secondary school education. Additionally, the BIA-sponsored Indian Relocation programs of the 1950s and 1960s provided out-of-village (or off-reservation) training opportunities for American Indians (Hodge 1984; Weibel-Orlando 1991; Weppner 1984). Natives were sent to cities and trained in a variety of skills. Both the boarding school program and the BIA Vocational training programs were part of the assimilationist philosophy which dominated Indian policy in the 1950s and 1960s, and which carried through in Alaska until the early 1970s. This philosophy, and policies engendered by it, promoted the idea that Native Americans should lose their 'Nativeness' and their separate cultural identity, and become part of mainstream western culture (Waddell and Watson 1984; Weibel- Orlando 1991). By the early 1970s, the Civil Rights movement of the lower 48 states found expression in Alaska; and assimilationist policies were, at least outwardly, discouraged.

In 1971, the Alaska Native Claims Settlement Act (ANCSA) was passed into law. As a result of ANCSA, aboriginal title to the land was extinguished; and exchanged for some land and money. Twelve regional, one at-large, and numerous village corporations were established to manage land and money. Native people claiming at least one-fourth Alaska Native blood were provided with shares of stock in both the village and the regional corporations. While ANCSA was heralded as a landmark settlement of aboriginal land rights at the time of its passage, numerous problems (many seemingly without resolution) have arisen since ANCSA became law. The most common and difficult problem lies in the accommodation of Natives born after 1971, as the original law only provided for Natives born as of December 18, 1971. Another problematic and equally difficult situation lies in the status of stock after 1991, when it was supposed to go public. Attempted solutions to these and other problems, outlined in the so-called 1991 Amendments, have met with varying levels of success.

In 1972, just after the passage of ANCSA, the Alaska Legal services sued the State of Alaska on behalf of a rural student who was required to attend school away from her village. The lawsuit charged that existing alternatives did not provide the same educational opportunities as the student's home community. Following this suit, in 1976 the State of Alaska agreed that all villages with elementary schools should have high schools. The state then began a $143 million construction program to comply with the consent decree. Today, almost all students in the roughly 211 villages in Alaska can choose to be educated at home.

This very general historical overview indicates that the past 125 years have been a time of tremendous change for Alaska and its people, particularly Indigenous people. These changes have contributed to the unique situation of Alaska today. A brief review of the development of each of the four communities provides added insight into the contemporary communities.

Community Development

Grayling

As reported by Orth (1971: 388), the village of Grayling sits on the west bank of the Yukon River, about 21 miles north of Anvik. While the contemporary site of Grayling may originally have been a Deg hi'tan settlement, by 1866 Doy hi'tan Athabascans had moved southward into this territory (Osgood 1940). Since then, Grayling has been part of Doy hi'tan territory; and contemporarily it represents the only existing village of distinctly Doy hi'tan descent (Kari 1978; Orth 1971; Vanstone 1979b).

According to historical accounts, intermittent settlements existed at Grayling by 1869; and by 1900, it was a year-round settlement (de Laguna 1936a, 1947; Nelson 1887; Osgood 1936b; Oswalt 1962; Zagoskin 1967[1847]). Numerous other sites in the surrounding area were occupied, however, so that Grayling was but one of many inhabited settlements .

Both Kolmakov (Snow 1981) and later Nelson (Nelson 1887) note the existence of the Doy hi'tan. In the mid 1800s, Kolmakov noted at least five villages above Holikachuk slough; and forty years later, Nelson estimated the population of this area to be numerous (Nelson 1887; Vanstone 1978). Somewhere between 1844 and 1866 the Doy hi'tan population shifted southward, so that previously Deg hi'tan villages became Doy hi'tan territory. From then on, anywhere from 114 to 300 people were estimated to be living in a number of different villages (Oswalt 1962; Zagoskin 1967[1847]). Some population consolidation may have taken place by the end of the nineteenth century, due in large part to disease; so that by the turn of the century, two primary villages were occupied by Doy hi'tan Athabascans, Holikachuk and Grayling.

In 1963, the village of Holikachuk (on the west bank of Innoko River, 27 miles northeast of Anvik and 49 miles north of Holy Cross) was abandoned and the majority of its residents moved to Grayling (Orth 1971; Snow 1981). At that time, approximately 25 families moved to the new village site of Grayling (Orth 1971; Snow 1981; Vanstone 1979b). Among the explanations that have been given for the abandonment of Holikachuk and subsequent settlement at Grayling include the relative isolation at Holikachuk, and the expectation of lower freight rates and other associated advantages (Arundale 1983). It should be noted that Grayling was not randomly chosen; it had long been used as a summer fishing site by residents of that area (Arundale 1983).

Prior to 1903, when some steamers began to change over from wood to oil-burning engines, many of the settlements along the Yukon served solely as fuel stops for the steamers. Prices paid for wood varied; woodcutters received from $1.00/cord to $4.00/cord, or perhaps a bag of flour. As more boats began using the Yukon, the sale of wood became more structured; and the owners of fleets with many boats began to maintain their own wood yards. One of these was located at the present day site of Grayling, which undoubtedly accounts for Cantwell's description of Grayling in 1900 (Cantwell 1902).

Grayling appears to have been inhabited at least on a semi-permanent basis around the turn of the century. Lt. Cantwell, (1902: 144) reported that in 1900, Grayling consisted of "a store, a large woodshed and a population of about 75 Indians." By about 1920, however, it was abandoned for a period of time (de Laguna 1936a, 1947; Nelson 1887; Orth 1971). This desertion may have been related to the epidemics and subsequent population reduction which occurred beginning with Russian contact (1839), and continued well into the 1900s (Fortuine 1985; Wolfe 1982). According to the 1970 census (the first one to include Grayling), the population was recorded as 139; by 1990 that figure had increased to 208 (United States Department of Commerce 1970, 1980, 1990).

Anvik

The contemporary village of Anvik is located on the Yukon River, at the mouth of the Anvik River, roughly 34 miles north of Holy Cross (Orth 1971: 82). Anvik has a lengthy recorded history, having first been mentioned by the Russian explorer Glazunov in his 1833-1834 expedition. Since that time, the village of Anvik has been continually occupied, although the population has varied with its name: Anvik has also been referred to as Anwig, American Station, Anvic, Anvick, Anvig, Anvig station, and Anwig (de Laguna 1936a, 1947; Nelson 1887; Vanstone 1978, 1979a, 1979b; Zagoskin 1967[1847]).

As might be expected given the high rates of mobility which characterized the Deg hi'tan, the present-day site of Anvik was seasonally occupied. Interestingly, Anvik was not inhabited on a full time basis until the Episcopal Mission was established at that site in 1887 (Vanstone 1978, 1979a, 1979b). However, Zagoskin mentions Anvik as being occupied during the time of his winter visit; and archaeological investigations indicate that the site was occupied long before 1888 (Arundale 1983; de Laguna 1936a, 1947; Ganley 1987; Zagoskin 1967[1847]). Around 1888, however, a sizable Deg hi'tan population lived across the river. They undoubtedly provided an initial target population for missionary activity. The Deg hi'tan continued to utilize the site across the river, as it provided an excellent fishing site. By the turn of the century however, Chapman (1903, 1013) happily reported that most people had moved onto mission property and were living in above-ground houses.

With time, more people moved onto mission grounds, although their settlement could not necessarily be characterized as full time or permanent. The epidemics of 1898 through 1901 hit Anvik, although apparently not as severely as at Grayling, Shageluk, and Holy Cross (Fortuine 1985; Vanstone 1979b). The mission provided a medical alternative to treatment by shamans, although it is not clear if one superseded the other.

The mission served as an orphanage, and with the deaths resulting from epidemics, the mission population grew (Fortuine 1985; Vanstone 1979b). The 'stable' Deg hi'tan population referred to in many of the historical accounts may actually refer to the children living at the mission for lack of any other options (Vanstone 1979b: 156). In addition to the mission, a trading post and post office occupied the village of Anvik. The Alaska Commercial Company maintained a post in Anvik until shortly after the turn of the century. After that, the area was served primarily by independent traders (Vanstone 1979b). In 1907 a federally-funded school was established at Anvik. The move to Anvik was probably completed between 1930-1940 (Ganley 1987). Chapman retired in 1931; and his son Henry, who served until 1948, took over. After that, attention to the mission was intermittent; and today it is no longer in operation.

People continued their seasonal movement, often incorporating the mission and trading post into their seasonal round, as they provided another resource to exploit. While some individuals undoubtedly lived full time at the mission, the vast majority of Deg hi'tan probably retained their mobility well into the 1900s.

As is true of residents of the village of Grayling, many individuals in the area of Anvik cut wood for the steamships traveling the Yukon river (Vanstone 1979b). Because they cut wood in fall and winter in anticipation of the summer steamship travel, there was a temporary slow down in trapping. Trapping provided a contribution to food staples for local people. After steamships were converted to oil, many local people went back to trapping, which continues to provide an important source of furs, and, indirectly, cash.

The population of the village of Anvik has fluctuated in size since it was first recorded. According to the 1990 census, the village of Anvik numbered 82, down slightly from 1980 (United States Department of Commerce 1980, 1984).

Shageluk

According to Orth (1971: 858) the village of Shageluk is located on the east bank of the Innoko River, 20 miles east of Anvik and 34 miles northeast of Holy Cross. The history of Shageluk is similar in many respects to that of Anvik.

A settlement near the contemporary village of Shageluk was visited by many of the early Russian explorers, and was first recorded by Zagoskin on his 1850 map (Zagoskin 1967[1847]). (Zagoskin referred to Shageluk as Tlegoshitno). Eleven years later, another Russian, Tekhmenien, the chief historian for the Russian American Company, recorded a collection of villages within close vicinity of each other and of the present day village of Shageluk. These settlements were later referred to as the "Chageluk settlements" by Petroff (1900). These settlements were inhabited by Deg hi'tan Athabascans. Cornelius Osgood, who conducted work in this area in the mid 1930s, referred to the people as Anvik-Shageluk Ingalik. Unquestionably, their relatives are the contemporary inhabitants of Shageluk.

The history of Shageluk is similar to that of the other settlements in the region in terms of the impact of the miners, trappers and traders. Because of its location on the Innoko River, Shageluk may have benefited from more privacy and less direct intervention into the residents daily lives. However, Shageluk and Anvik have long historical connections; and it is just as probable that impacts on Shageluk were comparable to those on Anvik.

Because of its location on the Innoko River, young men typically went out to the logging camps to work for the larger steamship companies. It appears that wood cutting was only a secondary activity for most Shageluk residents. An important source of income and/or trade came through trapping. However, the federal government curtailed trapping activities starting in 1918, when it placed restrictions on the trapping of beaver and marten, two of the more important furs in this area.

The population of the Shageluk area fluctuated throughout the early part of this century, although since 1940 it has increased. By 1970, the population was roughly 170; and Shageluk residents had moved from the old village site to its present site, about two miles away. The move was generated by desire to get out of reach of spring floods, not uncommon in this area. According to the most recent census, in 1990 the population numbered 139, a decrease from 190 in 1980 (United States Department of Commerce 1980, 1990). The population numbered 132 during the 1991 study season.

Holy Cross

The village of Holy Cross, located on the West bank of Walker Slough, off the Yukon River, 34 miles southeast of Anvik, was originally established as a Roman Catholic mission and school in 1888. The mission site was chosen because of its immediate proximity to the Deg hi'tan settlement referred to as Kozerefsky or Koserefski (Orth 1971: 426).

Before the mission was established, however, settlements in the area of Koserefsky and present-day Holy Cross had been noted by Petroff and Zagoskin in their travels (Petroff 1900; Zagoskin 1967[1847]). Zagoskin referred to these villages as Anilukhtakpak and Anilukhtak-kak. A few years later, Petroff referred to these settlements as Askhomute; and Nelson, Askhomut. The name Holy Cross was given to the present-day village in 1912.

The immediate goal of the Roman Catholic missionaries was to convert as many of the Deg hi'tan as possible. Upon conversion, people were allowed to move onto mission grounds, where they were cared for and carefully trained. Accordingly, the settlement gradually grew up around the mission buildings; and by 1915, the settlement of Koserefsky had ceased to exist. In 1957, the boarding school, which had been part of the mission since its start in 1886, was closed. The students were moved to the new school in Copper Center.

Mission accounts relate the controversy surrounding the mission and its relations with the people of Koserefsky. At best, relations can be characterized as tentative. "Progress" was doutbless perceived differently by the mission people and local people.

While the original inhabitants of the village were primarily Deg hi'tan, a sizable Kuskokwim river Yup'ik population (Kuskowagmiut or Kwikpagmiut) has also lived in and immediately adjacent to this area (Vanstone 1979b). In the year 1914, the territorial boundary between Deg hi'tan and Kuskowagmiut Eskimo was at Holy Cross (Sniffen and Carrington 1914: 20). According to Nelson (Vanstone 1978: 72), the settlement known as Anilukhtakpak was "a mixed community including both Indians and Eskimos." Further, Correll (1972) notes that intermarriage between Athabascans and Yup'iks of this area was a common occurrence. Osgood (1940) referred to this area as one of considerable intermixing between Deg hi'tan and Kuskokwim River Yup'ik people. Contemporary demographics indicate that many of the Kuskowagmiut may have moved to other areas (starting with Paimiut, roughly 20 miles downriver). The present day community of Holy Cross is primarily Deg hi'tan.

Trade

A discussion of the history of any part of Alaska is not complete without a discussion of trade and barter, vital activities which knit together the settlements discussed above with others throughout the North from prehistoric to contemporary times. Not surprisingly, trade has a lengthy history in rural Alaskan economies. Both direct and indirect trade between the Deg hi'tan and Doy hi'tan, and other neighboring (and non-neighboring) groups occurred long before Euroamerican contact. Trade was not only a means of acquiring goods; it provided the framework for interaction across socio-cultural and geographic boundaries.

Zagoskin mentions both the Deg hi'tan and Doy hi'tan as being heavily involved in trade. The latter group not only traded with the Deg hi'tan, but also with the Russian-American Company at the Nulato post, and with the Kuskwagmiut and the people living at the settlement of Anilukhtakpak (Zagoskin 1967[1847]).

In addition to trading with Native groups within Alaska, extensive trade was believed to have existed with people of the Siberian coast (Zagoskin 1967). According to Vanstone (1978: 65):

> The most urgent task assigned to Zagoskin, however, was to advise the (Russian-American) company concerning practical measures that could be taken so that trade from west central Alaska could be channeled to the company and not to peoples living on the coast of Asia.

Before ending the Native to Native trade, Euroamericans first had to gain command of indigenous trade routes. Some of these routes, which criss-crossed all of Alaska, were well-kept secrets (Andrews and Koutsky 1977), while others were readily apparent. As the following statement indicates, however, the existence of the routes was usually known long before their purpose was established:

> The flourishing trade between coastal Eskimos and Interior Athapaskans resulted in the development of well-established routes of travel and communication. These trade routes were apparent to the early explorers like Glazunov and Malakhov even before effects of resultant commercial dealings were fully understood by company officials (Vanstone 1979b: 67).

Upon their "discovery," however, Indigenous trade routes typically became frequented by Europeans, with the Indigenous trade monopoly quickly ending (Andrews and Koutsky 1977; 1979a; Vanstone 1979b).

Trade and barter provided the first means of, and framework for, interaction between native and non-native people. While undoubtedly functioning as both a forum for interaction and control, the extent to which either natives or non-natives dominated is unclear. It was not until the late 1800s that cash was introduced as a means of exchange between natives and non-natives (Vanstone 1979a), though it by no means usurped trade and barter, especially as the latter served the important function of immediacy. Thus, trade and barter continued to serve an integral role in rural economies. Trade goods most commonly included furs and dried fish (Vanstone 1979a, 1979b; Zagoskin 1967[1847]). Goods exchanged for these items included beads, pots and copper jugs, tobacco, flour, and later rifles, fabric, and commercial animal traps. Other goods included needles, dentalium shells, horn combs, copper and iron bracelets, bronze earrings, Yakut knives, flints, scrapers, buttons, and tin pipes (Vanstone 1979b).

Summary and Conclusions

The natural environment of the Deg hi'tan and Doy hi'tan area is varied. The area is characterized by seasonal extremes in both temperature and sunlight. While hills and mountains are integral to the area, the rivers, sloughs, creeks, lakes, and ponds predominate. The Yukon River and its tributaries dominate the area geographically; and, as might be expected, are important influences on mobility and resource harvesting activities in the region. The flora and fauna of the area is many and varied; and many species are utilized by the Deg hi'tan and Doy hi'tan Athabascans.

The Deg Hi'tan and Doy' hi tan, also known as Ingalik and Holikachuk respectively, represent two of eleven distinct Athabascan groups in Alaska. While differences between some of the groups in both culture and language are relatively extreme, differences between the Deg hi'tan and Doy hi'tan are more of degree than kind. Historically, both groups were extremely mobile; they lived a nomadic lifestyle, and relied upon a variety of fish and mammal resources. While both groups were noted for their fishing abilities, they also relied on ungulates, small mammals, and birds.

The recorded history of the people and the area includes a mix of Russian and European explorers, traders, and military expeditions, missionary (especially Catholic and Episcopalian) influences, and fortune seekers of all types (e.g., several gold rushes have occurred in the area through time). Concomitant with these varying Euroamerican influences were epidemics which periodically decimated the people of the area. Trade and barter provided much of the framework for interaction between the Deg hi'tan and Doy hi'tan and the Euro-Americans who traveled through the area. Even after cash was introduced in the late 1800s, trade and barter served as the preferred means of interaction, if only because results were immediately useful.

This lengthy history of trade, barter, and cash transactions with Euroamericans likely provided ample time for Deg hi'tan and Doy hi'tan to develop interactive strategies that worked in their favor. Thus, rather than being involved in increasingly unbalanced trade relations, as some have argued (Nelson 1887; Vanstone 1979b) Deg hi'tan and Doy hi'tan likely developed trade, barter, and exchange strategies that served their own needs.

Throughout history, and to the present time, the individual development of each community, and into the present time, has resulted in the Deg hi'tan and Doy hi'tan undergoing significant changes in their subsistence focus, settlement patterns, social relations, and interactions with other groups. While change has occurred, it is important to remember the dynamic and adaptive nature of these people's social institutions.

CHAPTER FOUR:
Contemporary Deg hi'tan and Doy hi'tan Communities: Government, Facilities, Demographics, Employment, and Subsistence

Introduction

In some ways, the communities of Grayling, Anvik, Shageluk, and Holy Cross are typical of other rural communities in Alaska: the populations are relatively small and young, particularly when compared with State and national averages. Average household size is higher in rural Alaska and the four communities than it is in other urban areas of the state or nation. The population of the four communities is primarily Alaska Native.[60] While 'Alaska Native' is comprised of American Indian, Eskimo, or Aleut, the majority of people in the four communities self- identify with the American Indian label.[61] According to the 1990 census, only twenty individuals in the four communities identified themselves as Eskimo; and only three people identified themselves as Aleut.

As is true of most of rural Alaska, employment opportunities in the market economy for residents of the four communities are extremely limited, a fact reflected in the relatively low household income levels. Reliance on fish and game resources is high; participation in hunting, fishing, and trapping is significant; and sharing of subsistence resources between households and within and between communities is common. The following overview provides a sense of the contemporary realities facing the four communities of Grayling, Anvik, Shageluk, and Holy Cross. The first part of the chapter provides an overview of the population and household structure of the four communities. The second part of the chapter examines facets of the areas' economy and infrastructure. The chapter closes with an overview of subsistence in the four communities, including levels of participation in hunting, fishing, trapping, and gathering; levels of sharing; and some of the costs associated with participating in subsistence.

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[60] According to the 1990 Census, Grayling is 93.3 percent Alaska Native, Anvik is 91.5 percent Alaska Native, Shageluk is 95 percent Alaska Native, and Holy Cross is 93.5 percent Alaska Native. Aside from Alaska Native, other ethnic groups represented in the four communities include Caucasian, African American, Asian-Pacific Islander.

[61] Athabascans fall under the broader, less specific American Indian label.

Population and Household Characteristics

Certain generalizations can be made concerning Alaska Native populations. For example, the Alaska Native population tends to be younger than the non-Native population; males tend to outnumber females; and most communities are weighed towards the younger age cohorts, suggesting steady or increasing birthrate[62] and reduced infant mortality (in addition to portending population growth in the future as these youngsters mature and begin raising families) (Fall 1990; McNabb 1990; Williams 1985, 1988).

Figures 3 through 6 and Tables 4-7 depict the population profiles for the study communities.[63] During the study year, the estimated population sizes for Anvik, Shageluk, Grayling, and Holy Cross were 97, 124, 204, and 275 respectively. As is consistent with rural Alaska profiles, the population was weighted towards the younger cohorts in all four communities (Williams 1988). Of the four communities, Holy Cross had the smallest percentage of the population (51.9 percent) falling in the 0 to 29 years of age cohorts. The population of Grayling was the most heavily weighted towards the younger cohorts, with 63.5 percent of the population falling between 0 and 29 years of age. Anvik had 60 percent of the population between 0 and 29 years of age, and in Shageluk 56.6 percent of the population fell in this group.

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[62] While the specific birthrate for the four communities is not available, the birthrate for the McGrath/Holy Cross census sub-region which includes the four communities is. The McGrath/Holy Cross Census sub-region had the highest reported birthrates for women in all three age classes, 15-24, 25-34 and 35-44 , when compared to both Alaska and the United States.

[63] The figures and tables display community estimates which are extrapolated from the sample data.

Figure 3. Population Profile, Grayling, 1990-1991.

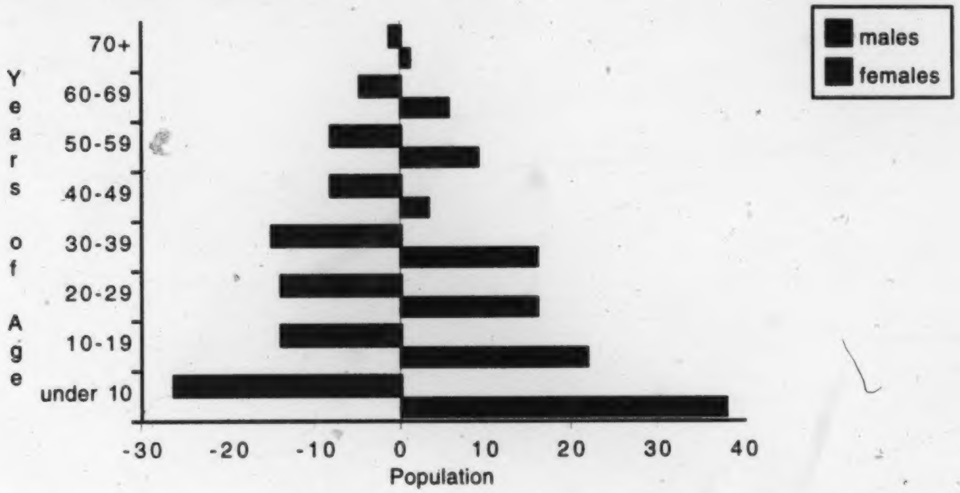


Table 4. Population Profile, Grayling, 1990-1991.

Age	Male			Female			Total		
	Number	Percent	Cum. Percent	Number	Percent	Cum. Percent	Number	Percent	Cum. Percent
0-9	37.8	34.0	34.0	26.4	29.1	29.1	64.2	31.5	31.5
10-19	21.8	19.6	53.6	13.8	15.2	44.3	35.5	17.4	48.9
20-29	16.0	14.4	68.0	13.8	15.2	59.5	29.8	14.6	63.5
30-39	16.0	14.4	82.5	14.9	16.5	75.9	31.0	15.2	78.7
40-49	3.4	3.1	85.6	8.0	8.9	84.8	11.5	5.6	84.3
50-59	9.2	8.23	93.8	8.0	8.9	93.7	17.2	8.4	92.7
60-69	5.7	5.2	99.0	4.6	5.1	98.7	10.3	5.1	97.8
70+	1.1	1.0	100.0	1.1	1.3	100.0	2.3	1.1	98.9
missing							2.3	1.1	100.0
Total	111.2	54.5		90.6	44.4		204.0	100.0	

Figure 4. Population Profile, Anvik, 1990-1991.

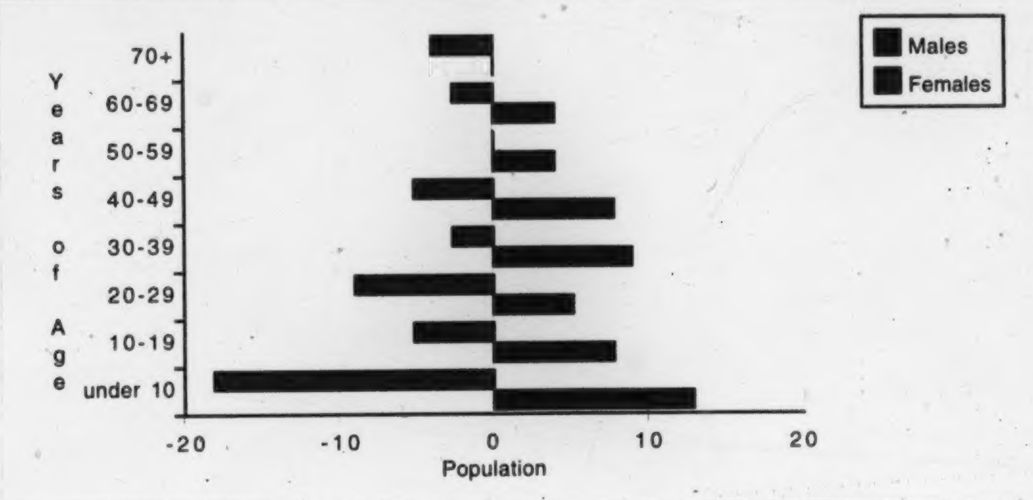


Table 5. Population Profile, Anvik, 1990-1991.

Age	Male			Female			Total		
	Number	Percent	Cum. Percent	Number	Percent	Cum. Percent	Number	Percent	Cum. Percent
0-9	12.9	25.6	25.6	18.1	38.9	38.9	31.0	32.0	32.0
10-19	7.8	15.4	41.0	5.2	11.1	50.0	12.9	13.3	45.3
20-29	5.2	10.3	51.3	9.0	19.4	69.4	14.2	14.7	60.0
30-39	9.0	17.9	69.2	2.6	5.6	75.0	11.6	12.0	72.0
40-49	7.8	15.4	84.6	5.2	11.1	86.1	12.9	13.3	85.3
50-59	3.9	7.7	92.3	0.0	0.0	86.1	3.9	4.0	89.3
60-69	3.9	7.7	100.0	2.6	5.6	91.7	6.5	6.7	96.0
70+	0.0	0.0	100.0	3.9	8.3	100.0	3.9	4.0	100.0
Total	50.4	52.0		46.5	48.0		96.9	100.0	

Figure 5. Population Profile, Shageluk, 1990-1991.

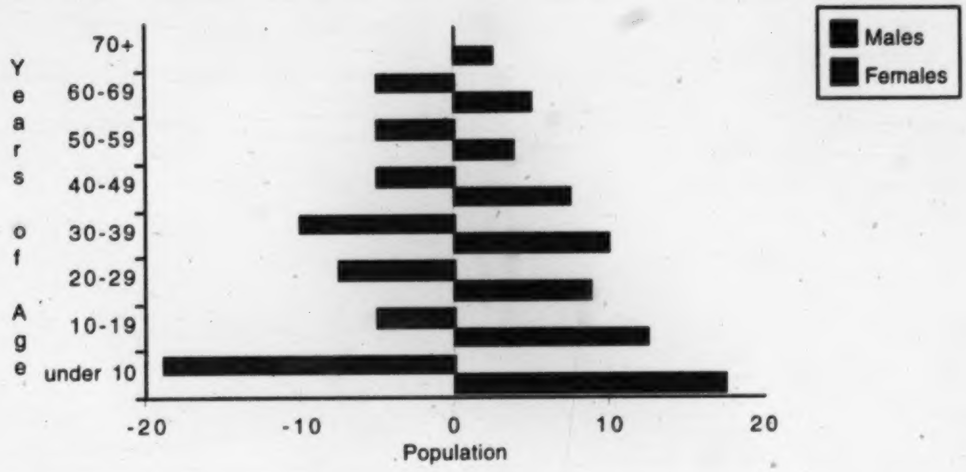


Table 6. Population Profile, Shageluk, 1990-1991.

Age	Male			Female			Total		
	Number	Percent	Cum. Percent	Number	Percent	Cum. Percent	Number	Percent	Cum. Percent
0-9	17.5	25.9	25.9	18.8	33.3	33.3	36.3	29.3	29.3
10-19	12.5	18.5	44.4	5.0	8.9	42.2	17.5	14.1	43.4
20-29	8.8	13.0	57.4	7.5	13.3	55.6	16.3	13.1	56.6
30-39	10.0	14.8	72.2	10.0	17.8	73.3	20.0	16.2	72.7
40-49	7.5	11.1	83.3	5.0	8.9	82.2	12.5	10.1	82.8
50-59	3.8	5.6	88.9	5.0	8.9	91.1	8.8	7.1	89.9
60-69	5.0	7.4	96.3	5.0	8.9	100.0	10.0	8.1	98.0
70+	2.5	3.7	100.0	0.0	0.0	100.0	2.5	2.0	100.0
Total	67.5	54.5		56.3	45.5		123.8	100.0	

Figure 6. Population Profile, Holy Cross, 1990-1991.

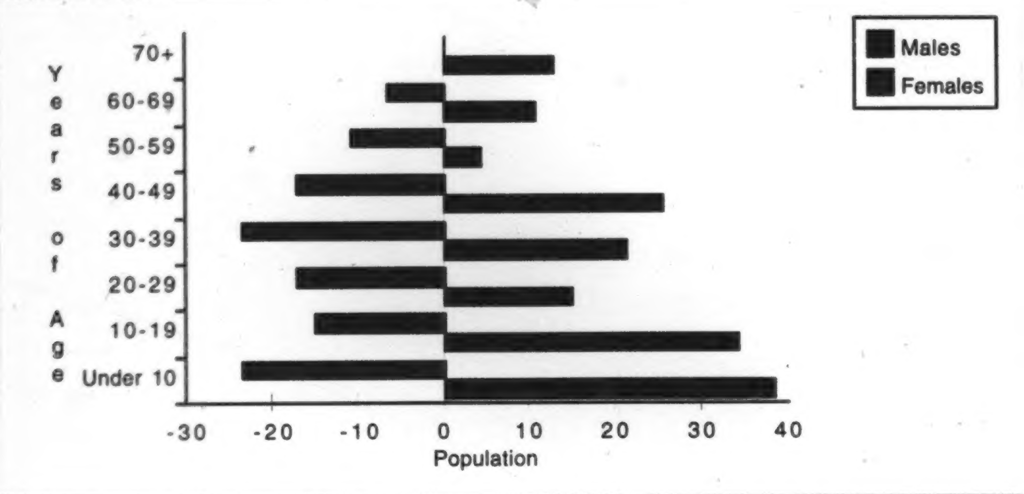


Table 7. Population Profile, Holy Cross, 1990-1991.

Age	Male			Female			Total		
	Number	Percent	Cum. Percent	Number	Percent	Cum. Percent	Number	Percent	Cum. Percent
0-9	38.8	23.7	23.7	23.4	20.8	20.8	61.7	22.5	22.5
10-19	34.1	21.1	44.7	14.9	13.2	34.0	48.9	17.8	40.3
20-29	14.9	9.2	53.9	17.0	15.1	49.1	31.9	11.6	51.9
30-39	21.3	13.2	67.1	23.4	20.8	69.8	44.7	16.3	68.2
40-49	25.5	15.8	82.9	17.0	15.1	84.9	42.6	15.5	83.7
50-59	4.3	2.6	85.5	10.6	9.4	94.3	14.9	5.4	89.1
60-69	10.6	6.6	92.1	6.4	5.7	100.0	17.0	6.2	95.3
70+	12.8	7.9	100.0	0.0	0.0	100.0	12.8	4.7	100.0
Total	161.7	58.9		112.8	41.1		274.5	100.0	

There were more males than females in all four study communities. The greatest discrepancy between males and females existed in Holy Cross, in which 58.9 percent of the population was male, and 41.1 percent were female. Anvik was closely balanced, with 52 percent male and 48 percent female. In Grayling and Shageluk, 54.5 percent of the population was male and 44.4 percent of the population was female.

Dependents, as measured in the three cohorts 0-9, and 10-19, and 70 and above, accounted for close to fifty percent of the total population in all four communities: Holy Cross and Shageluk were the lowest in dependent population at 45 and 45.4 and percent, respectively. The highest was Grayling at 50 percent, and Anvik was at 49.3 percent. The dependency ratio ranged from 1:1 in Grayling, to 0.82:1 in Holy Cross.

Table 8 and Figure 7 provides the household size of sample households for the four communities. Sample households ranged in size from 1 to 11 persons. Of the 136 households in the sample, slightly more than 20 percent were comprised of only one person. Similarly, slightly more than 18 percent of the households in the four communities were comprised of 5 people. Eighty-six percent of the sampled households consisted of five or less people.

Table 8. Sampled Household Size for Grayling, Anvik Shageluk, Holy Cross, 1990-1991 (Source: Field Data).

	Number of People in Sampled Households										
	1	2	3	4	5	6	7	8	9	10	11
Grayling	6	5	7	4	5	8	1	2	2	0	1
Anvik	7	4	1	3	9	0	0	0	0	0	0
Shageluk	7	6	6	5	6	2	0	0	0	0	0
Holy Cross	8	6	8	9	5	0	1	1	1	0	0
Total	28	21	22	21	25	10	2	3	3	0	1

Figure 7. Sample Household Size Composition, Grayling, Anvik, Shageluk, Holy Cross, 1990-1991.

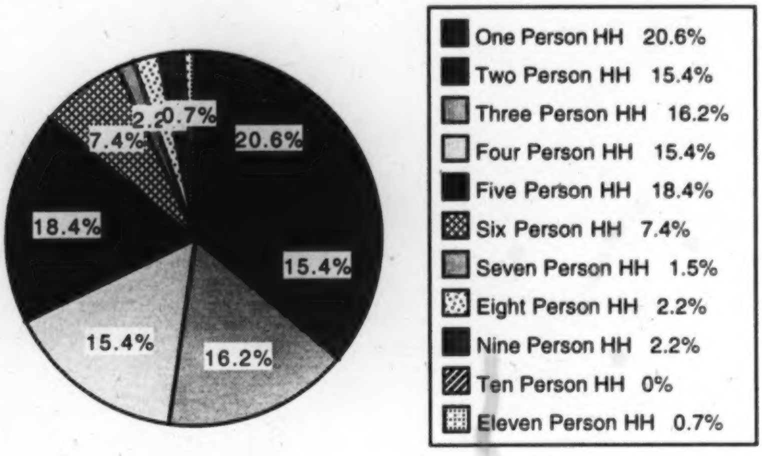
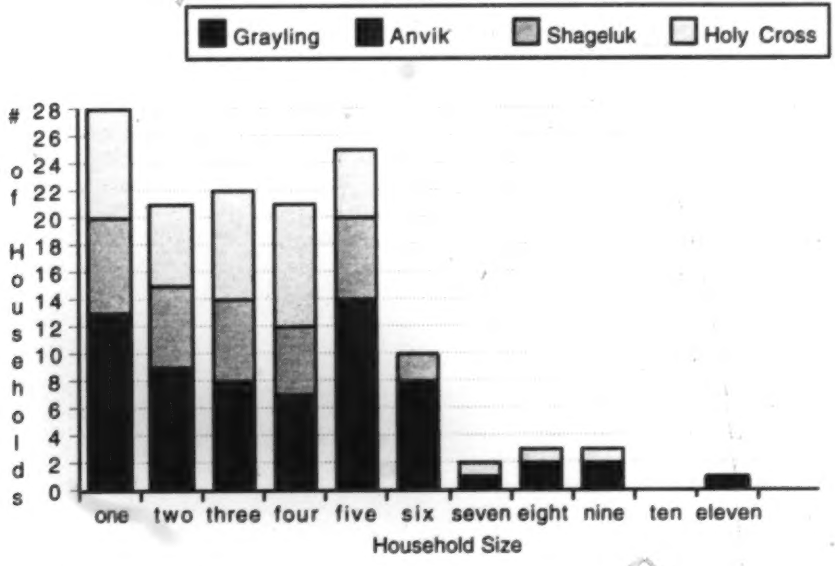


Figure 8 provides the sampled household sizes by community. Grayling boasted the largest household size in the sample (11); and, along with Holy Cross, had the only households with seven, eight, and nine household members. Average household size for the four communities collectively was 3.5 people, a figure higher than the average household size for Alaska (2.9) or the U.S. (2.7) (United States Department of Commerce 1990). The larger household sizes are likely related to the fact that more than two generations commonly live together in a single household. Average household sizes ranged from a high of 4.3 people per household in Grayling to 3.1 people per household in Shageluk, and Anvik.

Figure 8. Sampled Household Size by Community, Grayling, Anvik, Shageluk, Holy Cross, 1990-1991.



As a final note, a few points should be made about the term 'household.' While commonly used as a designator for all sorts of different categories, 'household' in the context of rural communities must be qualified. An integral part of subsistence economies, and the communities in which they exist, are linked households. The communities of Grayling, Anvik, Shageluk, and Holy Cross are no different. Many households in the four communities represented at least three generations of people, and it was not uncommon to have unrelated people occupying the same residence. In most cases, individual households were linked through kinship to at least one and usually more households. Linked households commonly cooperated in subsistence activities, and sharing food and equipment. Through time, the growth of the four villages has been based largely on kinship, which has functioned as a primary means of recruitment or affiliation. As a result, kinship ties are widespread throughout the four villages.

Economic Attributes of the Four Communities

Sources of income for residents of the four communities include wage employment, commercial fishing, trapping, other self-employment, transfer payments and dividends. As noted, wage employment is sporadic; and varies from season to season as well as from year to year. Opportunities to participate in wage labor are limited; in the four communities, households having no employed members ranged from a high of 41 percent in Holy Cross, to a low of 20.8 percent in Anvik. In Holy Cross, 35 percent of the people employed held full time year-round jobs, and only 11.5 percent of the people employed in Anvik held full time year-round jobs. The majority of jobs in the four communities are funded either directly or indirectly through federal or state government. Commercial fishing provided a source of income for some households in 1991, although income derived from commercial fishing, as with wage labor, varies from year to year. Similarly, trapping provides a source of some cash to many households, although it too varies from year, depending on availability and marketability of furs. Cottage industry, mostly in the form of craft production (i.e., marten hats, drums, dolls), provided a source of income to some households as well. Many households received payment from at least one of many social service programs such as Aid to Families With Dependent Children (AFDC); Supplemental Security Income (SSI); medical payments for such programs as Medicare, Medicaid, and Indian Health Service; Adult Public Assistance (APA); veterans benefits; Longevity Bonus;[64] and food stamps. Except for individuals with outstanding debts to the Internal Revenue Service, or those in arrears on Child Support Payments, all residents received Alaska Permanent Fund dividends.[65] Stock dividend payments from Village and

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[64] The longevity Bonus Program, instituted in 1982, was designed to pay homage to Alaska Pioneers; and provides a payment of $250/month to every Alaskan over the age of 65.

[65] The Alaska Permanent Fund dividend is an annual payment made to all Alaska residents from North Slope oil revenues. The program, authorized by the Alaska State Legislature in 1981, has paid out dividends since its inception. In the 1990s, payments have averaged over $900/year. It is not unusual for the Alaska Permanent Fund dividend, a major cash influx to all households in Alaska, especially those in rural Alaska, to be spent on technology such as snow machines or outboards.

Regional Corporations[66] may contribute to household income. Finally, people in the National Guard earned some income by participating in the required number of drills; and a few individuals were store, or bed and breakfast/lodge, owners. Of all of these, Alaska Permanent Fund dividends and transfer payments are the most stable and consistent sources of cash. Limited opportunities for wage labor, and the high costs associated with living in the area, make these stable sources of cash an important component of the local resource base. Specific components of household income were not recorded for this study, but estimates are provided in the following discussion.

As will be noted, the cost of living for the area is relatively high; and according to the U.S. census, household poverty levels include a low of 12 percent in Grayling, to a high of 48.8 percent in Holy Cross.[67] The use of the term 'poverty levels' must be understood in the appropriate context. It is only one measure-- a subjective measure at that-- for determining household or community income and well-being. Because it includes only the cash coming into the household, and does not include wild fish and game harvests, it shows only a fraction of the picture, particularly in the context of economies in which the wild harvest of fish and game plays a significant role. As is noted by Asch (1976a: 36-37) in his testimony to the Mackenzie Valley Pipeline Inquiry regarding the Dene of the Northwest Territories:

> ... It must be clear by now that cash income accounts only for a portion of the total economy of Native people and thus they, unlike the stereotypic Southern Canadian poor, may have little cash but still not be impoverished: for a large portion of their subsistence comes from bush resources.

Further, as is noted by Usher (1976b: 12), "...The North may well be the only place where a poor man's table is laden with meat as a matter of course." Attributes of subsistence are discussed subsequent to a discussion on formal economic attributes of the four communities.

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[66] Village and Regional Corporations, formed under ANCSA (see chapter one), often but not always pay dividends to their shareholders.

[67] It is worthwhile to note that of the four communities, Grayling has the largest household size. There may be a correlation with lower poverty levels in Grayling, as larger household size will bring in more unearned income and hence elevate the household income. Similarly, Holy Cross has more single person households than any other community. One person households will net a much smaller portion of unearned income.

Employment

Employment statistics provide a limited view of all economies, particularly those in rural Alaska, largely because the definitions of unemployment and employment have questionable application. 'Unemployed' is defined by the State as an individual who is not currently working but is looking for a job, while 'working' is defined as providing a service for which one is paid.[68] Wage work is extremely limited in rural Alaska, often limited to a handful of jobs available in any given community. Interestingly, hunting, fishing, gathering, and trapping for subsistence, endeavors in which many people participate, do not qualify as 'work' according to state definition. Clearly, the concepts of being 'unemployed', 'looking for work,' and what one considers 'work' mean different things in rural Alaska. The four communities in this study are no exception. With these qualifiers in mind, we turn to unemployment figures and employment opportunities available in the four communities.

Department of Labor employment statistics show an annual average monthly employment of 2,587[69] for 1990 for the Yukon-Koyukuk district. This Figure is comparable with other rural areas (e.g., Dillingham level was 1,836 and Northwest Arctic Borough was 2,220). Employment levels for the first six months of 1991 were 1,841 compared to 2,015 for the first half year of 1990. The rate of unemployment in the Yukon-Koyukuk District for 1990 was 16 percent, compared to 8 percent for the State of Alaska as a whole.

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[68] Due to the limited number of jobs, as well as to the fact that subsistence is not considered work in the formal sense, many people do not qualify as being unemployed; that is, they are not looking for a job, since they know none are available, nor are they considered to be working if they are hunting, fishing, trapping, or gathering.

[69] This number refers to the average monthly employment.

Table 9 illustrates the number of employed household members in each of the four communities. As the table indicates, a low of 20.8 percent to a high of 41 percent of the households in the four communities had no employed members during the study period. From 34.1 percent to 46.9 percent of the households had one member employed at some type of work, and from 15.4 to 29.3 percent of the households had two members employed. In Grayling and Holy Cross, a small percentage of the households had four employed members; and one household in Anvik had five members employed at some type of work.

Table 9. Percent of Employed Household Members in Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

Number of Employed People	Percent of Sampled Households in			
	Grayling	Anvik	Shageluk	Holy Cross
0	24.4	20.8	34.4	41
1	34.1	41.7	46.9	41
2	29.3	25	18.8	15.4
3	0.0	8.3	0.0	0.0
4	12.2	0.0	0.0	2.6
5	0.0	4.2	0.0	0.0

Table 10 illustrates the levels of participation in types of employment by members of all four communities. Employment is broken down into four types: full-time year-round, part-time year-round, full-time seasonal and part-time seasonal. A total of 146 jobs are represented in this table; of these jobs 24 percent are full time-year round positions. Part-time year-round, and part-time seasonal positions comprise the majority of the jobs in the four communities (63.7%). Slightly fewer than half (44.5%) of the available positions are seasonal, and just over half (55.6%) are year-round.

Table 10. Percent of Full-time Year-round (FT/YR), Part-time Year-round (PT/YR), Full-time Seasonal (FT/Seas.) and Part-time Seasonal (PT/Seas.) Employment in Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

	Type of Employment			
	FT /YR	PT/YR	FT/Seas.	PT /Seas.
Grayling	20	20	21.8	38.5
Anvik	11.5	23	7.7	57.7
Shageluk	28	52	0.0	20
Holy Cross	35	40	10	15

Of the available positions in Grayling, 20 percent were full-time, year- round positions, 20 percent were part-time year-round, 21.8 percent were full- time seasonal, and 38.2 percent were part-time seasonal. Fifty percent of the employment in Grayling was part-time. A similar employment picture exists for Anvik, Shageluk, and Holy Cross. Of the 26 jobs in Anvik, only 11.5 percent were full-time year-round, 23 percent were part-time year-round, 7.7 percent were full-time seasonal, and the majority (57.7 percent) were part-time seasonal. Of the 25 reported jobs in Shageluk, 28 percent of the jobs were full-time year-round, 52 percent were part-time year-round, and 20 percent were part-time seasonal. There were no full-time seasonal positions in Shageluk. Finally, of the 40 reported jobs in Holy Cross, 35 percent were full-time year-round, 40 percent were part-time year-round, 10 percent were full-time seasonal, and 15 percent were part-time seasonal positions.

The preponderance of part time and/or seasonal employment characteristic of the four villages is typical of employment in rural Alaska. Part-time positions include teachers aides, postal clerks, air service agents, retail store clerks, and other school-related employment such as janitors, cooks and maintenance personnel. Full-time positions are typically related to the school or government (local or state); and include city clerks, Village Public Safety Officer (VPSO), water plant operator, generator operator, etc.. The majority of jobs are service-related and, as is true of almost everywhere in Alaska, either directly or indirectly funded by federal and/or state government. The relatively large number of part-time and/or seasonal positions can be accounted for by local involvement in fire fighting and seasonal construction opportunities.

Holy Cross and Grayling had the highest percentage of households with full-time year-round jobs, while Holy Cross and Shageluk had the highest percentage of jobs that were full-time year round during the study year. Several factors help to explain this phenomenon. First, the absence of full-time seasonal positions in Shageluk weighs the seven full time year- round jobs more heavily. Thus, while it is true that there are seven full-time positions in Shageluk, accounting for 28 percent of employment, the remaining employment, 72 percent, is part-time.

Holy Cross is a different situation. The TCC Sub regional Office is located in Holy Cross, thus providing several full-time positions. Also, Deloycheet, the local village corporation in Holy Cross, has been active in the village economy, working in construction, home and office rentals, building material sales, and fuel oil business. The other three village corporations do not provide the same level of employment. Finally, the school district offers a level of employment in Holy Cross and Grayling not available in the other two villages.

Commercial Fishing and Trapping

Commercial fishing and trapping provide limited and potentially lucrative opportunities to earn cash. Participation in commercial fishing and trapping is dependent on having access to the necessary equipment, license and/or area (e.g., trapline or fishing spot). Thirty-one residents of Grayling, Anvik, and Holy Cross held commercial fishing permits for either set nets or fishwheels during the study year. The number of permits and the associated gear type for each of the three villages in 1991 is shown in Table 11. There were no commercial fishing permits owned by residents of Shageluk in 1991, in spite of the fact that historically, residents of Shageluk fished the Yukon River. This situation may be tied to the exclusion of Shageluk fishermen through the limited entry system,[70] and to their residence on the Innoko River. It is unclear what levels of participation in commercial fishing would be by residents of Grayling if they still lived in Holikachuk.

Table 11. Commercial Fishing Permits by Gear Type for Grayling, Anvik, and Holy Cross, 1992 (Source: Commercial Fisheries Entry Commission, pers. comm. 1992).

	Gill Net Permit	Fishwheel Permit	Total
Grayling	6	4	10
Anvik	3	8	11
Holy Cross	1	9	10

In 1991, Grayling and Anvik fell into sub-district Y4A of the Yukon river,[71] and Holy Cross was in Y3 (Map 3). While Y3 included the area just below Russian Mission up to mile 301 (Old Paradise Village), sub-district Y4A was further divided into three statistical areas. Statistical area 334-44, where Anvik commercial fishers fished in 1991, included the Yukon River from Old Paradise to just above Anvik. Statistical area 334-45, where Grayling residents fished, included the Yukon River from just above Anvik up to Stink Creek. Statistical area 334-46 included from Stink Creek to Koyukuk (Alaska Department of Fish and Game Division of Commercial Fisheries 1992). The majority of commercial fishing in Y4A is directed at summer chum salmon, although Chinook salmon are taken incidental to the summer chum harvest. According to the Division of Commercial Fisheries, however, "virtually all of the District 4 Chinook salmon commercial harvest is taken in sub-districts 4B and 4C" (Alaska Department of Fish and Game Division of Commercial Fisheries 1992: 5).

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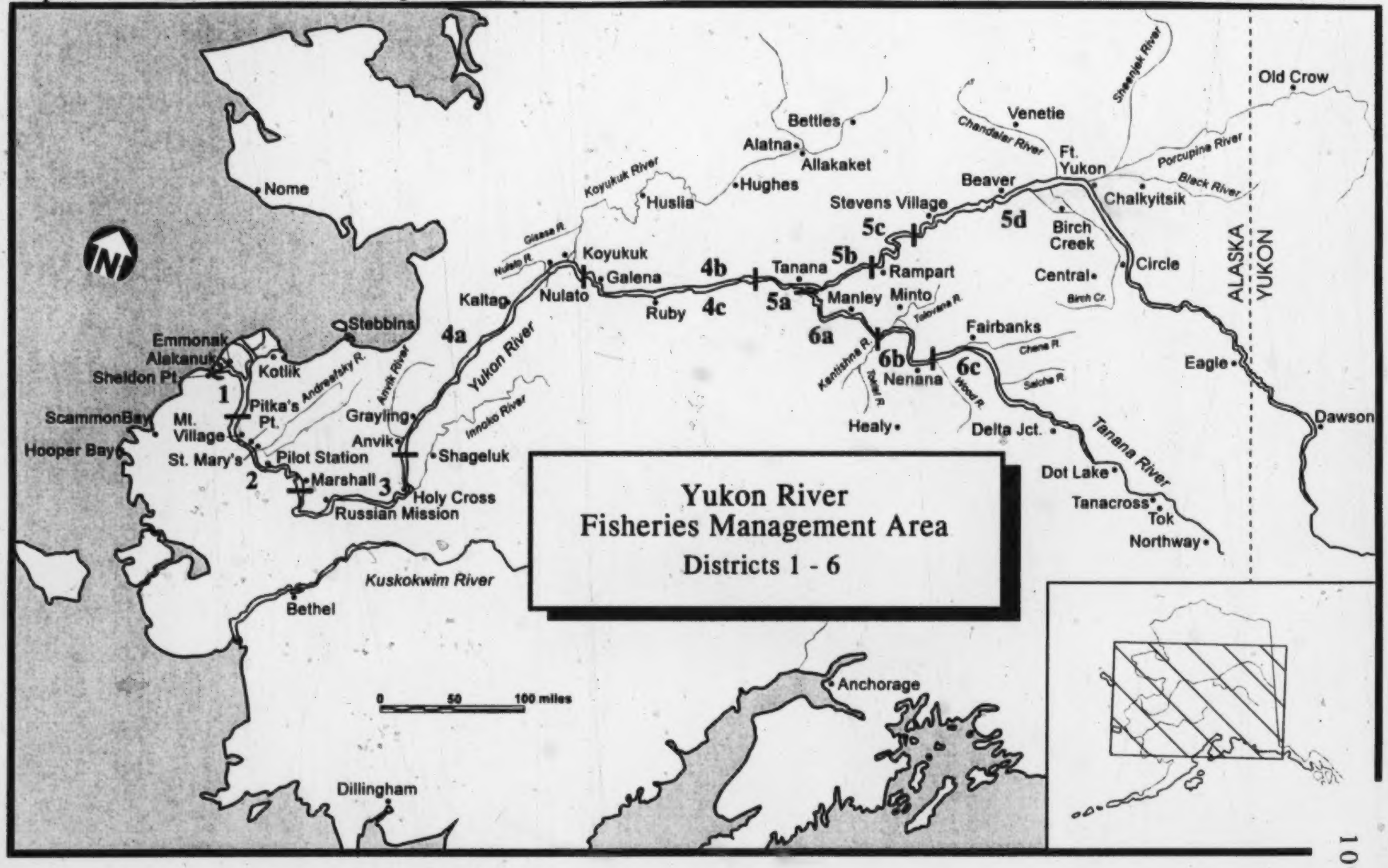
[70] In 1972, as a result of greatly increased numbers of both commercial fishermen and commercial fishing gear, the State Constitution was amended to allow the legislature to develop a limited entry system for the state's commercial fisheries. The purpose of the limited entry program was ostensibly to regulate and stabilize the amount of gear in each fishery and to assist in effective fisheries management (Dinneford and Hart 1986). The program required individuals wanting to fish commercially in Alaska to first purchase an interim use permit. If and when the fishery became limited, fishermen had to apply for a limited entry permit. Limited entry permits were awarded based on a point system: fishermen had to prove economic dependence on the fishery, assessment of reliance on and availability of other sources of income and occupations, and extent of previous participation in the fishery (measured in terms of years and degree of involvement.)

[71] The Division of Commercial Fisheries, Alaska Department of Fish and Game, is divided into districts and sub-districts so as to regulate/control fishing areas, fishing quotas, etc. more easily.

Map 3. Yukon River Commercial Fishing Sub-Districts.


Yukon River
Fisheries Management Area
Districts 1 - 6
N
Nome
Stebbins
Emmonak
Alakanuk
Sheldon Pt.
Kotlik
ScammonBay
Hooper Bay
Mt. Village
St. Mary's
Pitka's Pt.
Pilot Station
Marshall
Russian Mission
Holy Cross
Anvik
Grayling
Shageluk
Andreafsky R.
Anvik River
Innoko River
Yukon River
Kaltag
Nulato
Nulato R.
Gisasa R.
Koyukuk
Koyukuk River
Galena
Huslia
Hughes
Alatna
Allakaket
Bettles
Ruby
Tanana
Manley
Minto
Tolovana R.
Rampart
Stevens Village
Beaver
Venetie
Chandalar River
Ft. Yukon
Sheenjek River
Porcupine River
Black River
Chalkyitsik
Birch Creek
Central
Birch Cr.
Circle
Old Crow
ALASKA
YUKON
Eagle
Dawson
Kantishna R.
Toklat R.
Nenana
Wood R.
Healy
Fairbanks
Chena R.
Salcha R.
Delta Jct.
Tanana River
Dot Lake
Tanacross
Tok
Northway
Kuskokwim River
Bethel
Dillingham
Anchorage
0
50
100 miles
1
2
3
4a
4b
4c
5a
5b
5c
5d
6a
6b
6c

In 1991, District Y4 commercial fishing season opened on June 26. Due to anticipated high catch rates during this 48 hour opening, however, the five remaining commercial fishing periods in Y4A were limited, by emergency order, to 24 hours (Alaska Department of Fish and Game Division of Commercial Fisheries 1992: 5). In spite of these restrictions, fishermen in sub district Y4A sold 128, 231 pounds of roe (Alaska Department of Fish and Game Division of Commercial Fisheries 1992: 7). A breakdown of Y4A roe sales by statistical area is shown in Table 12.

Table 12. Summer Chum Roe Sales by Statistical Area, Y4A, 1991 (Source: Alaska Department of Fish and Game, Division of Commercial Fisheries).

Sub-District	Number of Fishermen	Pounds of Roe	Percent of Total Harvest
334-46	31	45,863	36%
334-44	17	39,281	30%
334-45	20	43,087	34%

Fishermen fishing in Y3 (in which Holy Cross is included) do not participate in a roe fishery; instead, they sell Chinook, Summer and Fall Chum, and Coho Salmon "in the round."[72] The commercial harvest of the 29 fishermen in District 3 is included in Table 13.

Table 13. District 3 Commercial Fishing Sales (number of fish), 1991 (Source: Alaska Department of Fish and Game, Division of Commercial Fisheries).

	Summer Chum	Chinook	Fall Chum	Coho	Total
District 3	8,912	2,344	9,213	1,905	22,374

While the number of commercial fishing permits available in the four villages is limited, and provides a cash-generating opportunity to only a very few individuals, commercial fishing nonetheless generates a significant amount of cash. The cash was subsequently redistributed to virtually the entire community in the form of other resources.

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[72] "In the round" refers to fish that are sold whole, as opposed to fish that are cut for their roe.

Commercial fishing is one of the few opportunities in which cash can be generated while conducting an activity which is also part of subsistence.

Trapping, on the other hand, is available to anyone possessing the skills, the equipment, and ties to a trapline.[73] Traplines are typically passed from father to son, as was the case a century ago (Vanstone 1978: 35-36). Today, as in the past, rights to traplines are respected as long as the particular area is used (letting the trapline lay 'fallow' for a period of several years is recognized as a legitimate use of the land). Traplines represent an interesting example of the integration of cash and subsistence: traplines generate cash, but are transferred through inheritance or through cultural and/or social networks.

During the 1990-1991 season, approximately 22 percent of the respondents to the survey participated in trapping for both commercial and subsistence use. While trapping is a source of cash, and fur sales provide an important export commodity for the four communities, trapping is equally important for trade and personal use, as has been noted for other areas in the Interior of Alaska (Wolfe 1991b). Due largely to the international and national controversies surrounding fur trapping, and resultant depression of the wild fur market, it is a becoming a less secure means of attaining cash.

Unearned Income/Transfer Payments

Transfer payments are defined as "incomes received by persons for which they do not render current services" (Geier, et al. 1995). As discussed, transfer payments received during the study year by residents of the four communities included Aid to Families with Dependent Children (AFDC); Adult Public Assistance (APA); Food Stamps (FS); Medical payments for such programs as Medicare, Medicaid, and Indian Health Service; Longevity bonus; veterans benefits; and Supplemental Security Income (SSI). In addition to providing one of the few stable sources of income for many rural families, transfer payments comprised a substantial cash supplement to each of the four villages.[74] Geier (1995: xi), based on an analysis of census data, claim that transfer payments[75] account for over 25 percent of the cash income in the four communities.

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[73] While not entirely clear based on the historical record, it appears that the Deg hi'tan and Doy hi'tan likely practiced what is commonly referred to as 'usufructory rights' (the right to use or enjoy the products of an estate not belonging to oneself) to trap lines; that is, the trapline area could be used but not owned. Further, once use was discontinued by an individual or family, another individual or family could assume ownership of the site merely by establishing use. For certain periods of time, commonly ranging from one to two years, usufruct rights hung in abeyance; and during that time permission had to be gained in order to use a specific site.

The aggregate number of cases for the four villages, and the average amount of payments for Aid to Families with Dependent Children, Food Stamps, Medicaid, and Adult Public Assistance for five months during the year September 1990-1991 are provided in Table 14. Public assistance payments are based on income for a previous time period; that is, payments distributed in September are based on June's income. It is therefore possible to access income levels in the community at different points in time by examining the payment information.

Table 14. Average Payments of Public Assistance, Grayling, Anvik, Shageluk, Holy Cross, 1990-1991 (Source: Division of Public Assistance, pers. comm. 1991).

Month	Number of Cases	Average Payment
September 1990	88	$544.00
December 1990	92	$572.00
March 1991	121	$657.00
June 1991	123	$572.00
September 1991	120	$519.00

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[74] This study took place subsequent to welfare reform in 1996-1997. The implications of welfare reform, specifically the planned five year limit to benefits, and other legislative changes expected to occur in the next few years (i.e. reduction of educational subsidies to rural areas) will likely be felt for a long time in many rural communities.

[75] In addition to the above mentioned sources of transfer payments, Geier also included retirement and related transfer payments; Civilian Health and Medical Plan of the Uniformed Services medical payments; unemployment insurance; veteran;s benefit payments; and transfer payments covering education, training assistance, the Alaska Permanent Fund payments, etc.

Household Income

Of the 136 households sampled, 30 chose not to report household income levels. Of the responses received, however, the average household income for three of the four villages was between $10,000 and $20,000 during the study year. The average household income was lower in Shageluk, falling between 0 and $10,000. Table 15 reports household income levels, and Figure 9 reports household income levels as a percent of the whole.

Table 15. Percent of Household Income Levels, Grayling, Anvik, Shageluk, and Holy Cross, 1990- 1991 (Source: Field Data).

Range of Household Income	Percent of households with range of income in Grayling	Anvik	Shageluk	Holy Cross
0-10,000	17.1	50.0	65.6	43.6
10,001-20,000	4.9	25	18.8	25.6
20,001-30,000	9.8	0.8	15.6	15.4
30,001-40,000	2.4	4.2	0	2.6
40,001-50,000	2.4	0	0	0
50,000+	0	0	0	2.6
missing	63.4	0	0	10.3

The information in Table 15 corresponds with data from the 1990 census (United States Department of Commerce 1990), which reports that the median household income in the four communities ranged from $10,694 in Anvik to $21,641 in Grayling. Transfer payments, Regional and Village Corporation dividends, Alaska Permanent Fund dividends, and energy assistance are included as household income; and often represent a substantial portion of the total income.[76] Estimates for the percent of the population living below poverty in 1990 included 12.6 percent for Grayling, 45 percent in Anvik, 34.8 percent in Shageluk, and 48.8% in Holy Cross (United States Department of Commerce 1990).

As illustrated in Figure 9, roughly 42 percent of the households for whom income levels were reported fell into the 0-$10,000 range. Slightly over 32 percent of the sampled households had incomes in the $10,001- $30,000 range. Roughly 4 percent of the sampled households reported income levels of $30,001 or more.

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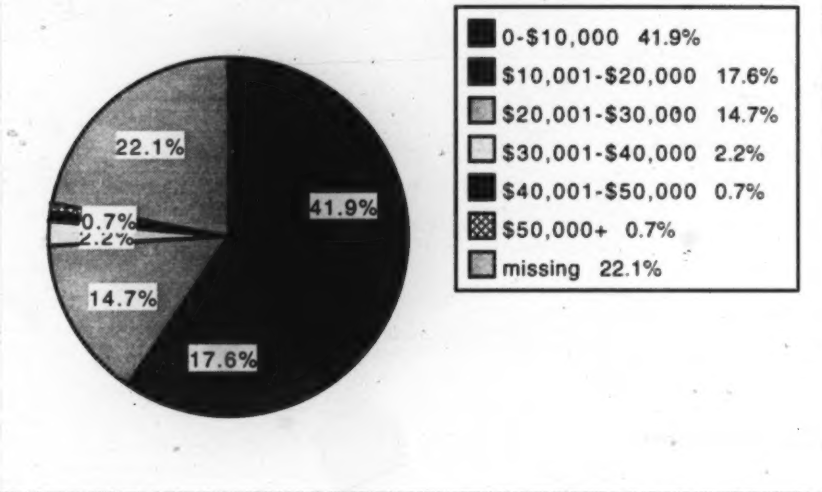
[76] As was noted previously, Alaska Permanent Fund dividends have averaged above $900 during the 1990s. In 1996, the payment was $1,130.68 per person. If a household contains five members, then, the payment could be as much as $5,653.40-- a not insignificant addition to any family's cash flow.

Figure 9. Relative Percent of Household Income Levels, 1990-1991.



It should be noted that subsistence foods are not included as part of the household income. Thus while the overall income is low, it does not mean that people are starving. On the other hand, continued subsistence production requires some level of cash input. Reduced cash income can mean lowered subsistence productivity. However, as will be discussed later in this chapter, there are other ways (aside from purchasing) subsistence equipment which provides for access to equipment, and hence subsistence resources.

Cost of Living

As a frame of reference, the comparative costs of food at home for a week for four communities is shown in Table 16 (United States Department of Agriculture and Cooperative Extension Service 1991). Due to its small size and relative isolation, McGrath (as opposed to Fairbanks, Anchorage, or Bethel) is probably the most similar to the four communities in terms of food costs.

Table 16. Cost of Food at Home for a Week for a Family of Four, With Elementary School Age Children, Selected Months, 1991 (Source: United States Department of Agriculture and Cooperative Extension Service 1991).

	Anchorage	Fairbanks	McGrath	Bethel
March 1991	$100.77	$106.00	$160.46	$152.69
June 1991	$102.84	$114.65	$160.59	$152.49
September 1991	$99.44	$110.34	$155.74	$153.07
December 1991	$98.40	$91.45[77]	$158.66	$148.82

As the table indicates, food costs are usually much higher in rural areas than they are in the urban centers of Fairbanks and Anchorage. Food costs in McGrath range from 57 to 60 percent higher than in Anchorage. Due to shipping and handling, food costs in the villages of Grayling, Anvik, Shageluk, and Holy Cross would exceed those in McGrath.

As might be expected, the costs of all consumable goods such as electricity, fuel (oil and gas), clothes, and rent are higher in the study communities than they are in urban areas. The remoteness of these areas, difficulty of access, and the associated costs of shipping are the main factors for the higher costs. An illustration of the high costs facing residents of the four villages is shown in Table 17.

Table 17. Comparison of Cost of Miscellaneous Items, Fairbanks and Holy Cross, 1990-1991 (Source: Field Data).

Item	Holy Cross	Fairbanks
1 gallon fuel oil	$ 2.25	$ 1.01
1 gallon gasoline	$ 2.45	$ 1.13
electricity (50 kwh)	$ 18.50	$ 9.90
monthly phone service	$ 25.74	$10.00
round trip airfare (Holy Cross-Anch.)	$571.00	N/A
monthly water/sewer service	$ 20.00	$15.00

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[77] The new Fred Meyers Store opened in Fairbanks this month, causing an unprecedented lowering of food prices city-wide.

Fuel oil and gas are commonly barged in by Mapco and its subsidiary, Nenana Barge lines, during the summer months. All of the villages have bulk fuel storage capacities. If the fuel supply runs out (as occurred during the 1990-1991 winter) fuel is flown in. The added costs are then passed on to the consumer. In all four villages, the City, the store(s), and the Village Corporations sell fuel.

Both oil-fired furnaces and wood stoves are used for heat. Reliance on different heat sources varied by community in 1991: in Shageluk, 100 percent of the homes used wood exclusively for heat, whereas in Holy Cross, only 27 percent of the homes used wood heat. In Grayling, approximately 60 percent of the homes used wood for heat, whereas in Anvik, this percentage was 62 percent. Determining variables included the age of the house, heat technology (e.g., furnace or woodstove) availability of wood or oil, money, time (to harvest and process wood), and outside temperature.

Running water and sewage were available to most residences in Holy Cross and Grayling in 1991. Approximately 80 percent of the houses in Holy Cross and 93.5 percent of the homes in Grayling were connected to public sewage disposal system and a public water system in 1991. The remaining homes typically hauled their own water, and used honey buckets[78] or outhouses. In Anvik and Shageluk, the situation was quite different. None of the houses in Shageluk and only 7 percent of the households in Anvik were connected to the public sewage system. The situation for public water was much the same. Without the use of public water, people generally hauled well water from a central point, typically the washeteria. As might be expected, the newer homes had more efficient water and sewer systems, while residents of the older homes continued to utilize honey buckets and/or outhouses.

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[78] "Honey buckets" refers to containers used in the home to deposit human waste in the absence of indoor plumbing. Some communities have "honey bucket" pick-up service, while residents of other communities must dispose of the contents of the honey buckets themselves. All communities have some sort of sewage lagoon, into which the contents are deposited.

Electrical service is provided by Alaska Village Electrical Coop (AVEC), with its headquarters in Anchorage. Electricity is generated by diesel fuel. Rates are subsidized through the power cost equalization (PCE) program. In 1991, the minimum monthly charge for the four villages was $18.60 (50 kwh), with additional per kilowatt hour charge of 0.372 (AVEC pers. comm. 1992). Local telephone service is provided by Bush Tell, Inc. (BTI), with its headquarters in Aniak. Long distance service is provided by Alascom. The monthly residential telephone charge in 1991 was $25.74, with long distance toll charges adding substantial costs (BTI pers. comm. 1992). Long distance charges include any call outside of the local community. Communication within the village is just as likely to occur through the use of Citizen Band (CB) radio, as through telephone. Television service is provided by Alaska Rural Communication System, or ARCS.

All four communities have health clinics, three of which are owned by the respective city governments. The exception is Anvik, in which the clinic is owned by the local village corporation, Ingalik, Inc. All four clinics are leased to the public health service. The four study communities have health aides, who administer to all community health problems. The regional health organization is the Yukon-Kuskokwim Health Corporation.

In 1991, Mark Air and Larry's Flying Service made regular daily stops in each of the four villages. Mark Air held the US Postal Service contract for all four communities. All four communities are accessible only by airplane or snow machine in winter; and airplane, boat, or barge during summer.

Local Government and Village Corporations

Both Anvik and Grayling were incorporated as second class cities in 1969. Holy Cross was incorporated as a second class city in 1968, and Shageluk was incorporated as a second class city in 1970. All four communities have a mayoral form of government and a seven-member city council. In addition, Anvik and Holy Cross have recognized

Traditional Councils, known as Anvik Village and Holy Cross Village, respectively; Grayling and Shageluk have recognized IRA[79] Councils, known as Organized Village of Grayling and Shageluk Native Village, respectively.

While all of the study communities are member villages of the regional corporation, Doyon, Ltd., all of them also have their own village corporations. Each person born prior to December 18, 1971, was entitled to 100 shares in their regional corporation and 100 shares in their village corporation. According to the original intent of ANCSA, the village corporations were the means by which shareholders were to obtain title to individual pieces of land (Arnold 1976). Pursuant to the Alaska Native Claims Settlement Act (ANCSA, 85 Stat. 706) of 1971, the Grayling village corporation, Hee-Yea-Lingde Corporation, was entitled to 92,160 acres of unappropriated lands. Hee-Yea-Lingde Corporation had 178 shareholders in 1974 (Arnold 1976: 331) most of whom were current Grayling residents born prior to December 18, 1971, as required by statute. Similarly, the Anvik village corporation, formerly known as Central Native Corporation and currently known as Ingalik, Inc., had 129 shareholders in 1974. Ingalik, Inc. was also entitled to receive 92, 160 acres of land. The village corporation of Shageluk, Zho-tse, Inc., had 185 shareholders in 1974 (Arnold 1976: 331). It too was entitled to receive 92,160 acres of federal land under the terms of ANCSA. Finally, Holy Cross village corporation, Deloycheet, Inc., had 429 shareholders in 1974 (Arnold 1976). Deloycheet was entitled to 138,240 acres from the Federal government. Conveyance for selected village lands is ongoing.

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[79] The Indian Reorganization Act (IRA) was applied to Alaska in 1936 (Act of May 1, 1936; 49 Stat. 1250).

Subsistence

Wild resource use is vital to the well-being of the four communities, as it is to the well-being of many Northern Native communities (Asch 1986; Berger 1985; Berkes, et al. 1994; Bodenhorn 1988; Bone 1989; Cassell 1988; Caulfield 1983; Dahl 1989; Dolitskey 1992; Ellanna and Balluta 1992; Feit 1994; Freeman 1986; Huntington 1992; Kruse 1991; Lonner 1986; Luton 1985; Nelson, et al. 1982; Nuttall 1992; Rushforth 1977; Tobias and Kay 1994; Wein and Freeman 1995; Wenzel 1981, 1985, 1986a 1986b; Wheeler 1993a; Wolfe, et al. 1984; Worl and Smythe 1986). As might be expected, considerable effort was expended by local residents of all four communities on hunting, fishing, trapping, and gathering[80] activities during the study year. Resources were shared freely; all hunters and fishermen shared fish and game which they had harvested, and some shared resources which had been trapped and gathered. All households participated in subsistence, either through direct harvest and consumption, or through receipt of resources by familial or community redistribution. This practice is consistent with Indigenous resource use throughout the North (Asch 1986; Berkes, et al. 1994; Bone 1989; Cassell 1988; Ellanna and Balluta 1992; Feit 1994; Freeman 1986; Kruse 1991; Lonner 1986; Luton 1985; Nelson, et al. 1982; Nuttall 1992; Rushforth 1977; Tobias and Kay 1994; Wein and Freeman 1995; Wenzel 1986b; Wheeler 1993a; Wolfe, et al. 1984). As well, barter is also particularly important in the context of trapping harvests. Natural resources are not the only subsistence-related goods shared: major items of technology, such as snow machines, boats, etc., are also borrowed and shared for the purposes of subsistence activities or getting access to resources. As noted by Bodenhorn (1988: 228)

> There are alternative ways to get access to equipment if you cannot buy it. People can give it to you, they can loan it to you, or they can share it with you while they use it themselves. All are used regularly...boats engines,

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[80] Hunting generally refers to the participation in the subsistence harvest or attempted harvest of big and small game (e.g., from moose, bear, caribou, to rabbits, ptarmigan, and waterfowl). Fishing refers both to subsistence and commercial fishing, in which the primary resources harvested include salmon, whitefish, sheefish, trout, and grayling. Trapping refers to both subsistence and commercial trapping, in which marten, beaver, and fox are the primary species harvested. Finally, gathering refers to any activity in which berries, greens, wood, and herbs are gathered for primarily personal or home consumption.

> boats, occasionally snow machines, camping equipment, and so forth may all be loaned between households, usually to family members, but not always. In this way the costs of hunting are spread out and access to the animals is maintained for a wide range of people..... To a significant extent, however, shared equipment functions now, as it has in the past, to allow people to "get at" their resources.

Subsistence harvests, therefore, are largely a reflection of community effort through cooperation, sharing, and redistribution of financial, technological, and wild resources. Community effort is a combination of individuals; their efforts, abilities, and resources, including animal resources, technological resources, and cash. Resources harvested and shared thus reflect the pervasiveness of individual and community integration.

Levels of Participation in Subsistence Activities

Table 18 illustrates overall levels of involvement in hunting, fishing, trapping, and gathering in the four communities in 1991. People in the study communities participate widely in subsistence activities, with the greatest proportion of households in each community involved in gathering, while trapping involved the smallest percentage of the households. From 75 to 90 percent of the households in all four communities had at least one member participating in hunting, and 69 to 90 percent of the households had at least one member fishing. Trapping reflected lower but nonetheless high levels of involvement, from a low of 37 percent involvement in Shageluk to a high of 71 percent involvement in Anvik. Finally, almost all households were involved at some level in gathering: from 77 percent of the households in Holy Cross to 98 percent of the households in Grayling.

Table 18. Household Participation in Hunting, Fishing, Trapping, and Gathering in Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

	Percent of Households Involved in			
	Hunting	Fishing	Trapping	Gathering
Grayling	88	90	46	98
Anvik	88	88	71	92
Shageluk	75	69	37	94
Holy Cross	90	85	44	77

Levels of involvement in hunting by household members of Grayling, Anvik, Shageluk, and Holy Cross are shown in Table 19. As the table indicates, the majority of households in all four communities had at least one member participate in hunting. A small percent of households in all communities had no household members participating in hunting. These households were primarily comprised of single parents, elderly, or infirm members of the community. The fact that levels of sharing were high, however, resulted in all households using resources that had been hunted.

Table 19. Percent of Households Participating in Hunting in Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

	Percent of Households Participating in Hunting in			
# of People	Grayling	Anvik	Shageluk	Holy Cross
0	12.2	12.5	25	10.3
1	58.5	66.7	62.5	66.7
2	9.7	12.5	6.25	7.7
3	14.6	0.0	6.25	7.7
4	4.9	8.3	0.0	5.1
5	0.0	0.0	0.0	2.6

Table 20 illustrates levels of involvement in fishing by household members in the four communities. As the table indicates, the majority of households in each community had at least one member involved in fishing, although a few households, ranging from 9.8 to 31.3 percent, did not have any members involved in fishing.

Table 20. Percent of Households Participating in Fishing in Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

	Percent of Households Participating in Fishing in			
# of People	Grayling	Anvik	Shageluk	Holy Cross
0	9.8	12.5	31.3	15.4
1	29.3	58.3	40.6	53.9
2	34.2	16.7	15.6	10.3
4	4.9	4.2	3.1	5.1
5	7.3	4.2	0.0	0.0
6	2.4	0.0	0.0	0.0
7	2.5	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0

Table 21 shows the levels of involvement in trapping. Although involvement in trapping was lower than for any other subsistence activity, some of the communities, such as Anvik, reflected relatively high levels of involvement. Even Shageluk, with the lowest participation rate, had 37.5 percent of the households with at least one trapper.

Table 21. Percent of Households Participating in Trapping in Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

	Percent of Households Participating in Trapping in			
# of People	Grayling	Anvik	Shageluk	Holy Cross
0	53.7	29.2	62.5	56.4
1	24.4	54.2	34.4	35.9
2	17.1	12.5	3.1	7.7
3	2.4	4.2	0.0	0.0
4	2.4	0.0	0.0	0.0

Finally, Table 22 shows household involvement in gathering. Clearly, gathering is an activity in which the vast majority of households participate. These data makes sense, as little equipment is needed for gathering; and it can be done close to the community (although quite often people do access good berry picking areas by boat, and good wood-gathering areas by snow machine).

Table 22. Percent of Households Participating in Gathering in Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

	Percent of Households Participating in Gathering in			
# of People	Grayling	Anvik	Shageluk	Holy Cross
0	2.4	8.3	6.3	23.1
1	29.3	50	50	35.9
2	26.8	20.8	31.3	23.1
3	19.5	8.3	6.3	5.1
4	7.3	8.3	6.3	5.1
5	7.3	4.2	0.0	7.7
6	2.44	0.0	0.0	0.0
7	2.44	0.0	0.0	0.0
8	2.44	0.0	0.0	0.0

Since age and gender are critical factors in determining who will or will not hunt, fish, trap, and gather, it is important to keep in mind the demographic profiles presented earlier in this chapter when examining levels of participation in the different activities. The relationship between age and gender composition of a population and resource use and subsistence activities is important for a number of reasons. First, subsistence activities tend to be stratified by gender; hence the overall pattern of subsistence activity may be subtly different in communities with very different gender characteristics; and second, both subsistence production (hunting, fishing, etc.) and subsistence consumption (use of subsistence products as food, raw materials, etc.) tends to vary on the basis of age (Ellanna and Sherrod 1995; Feit 1987; McNabb 1991; Wheeler 1987; Wolfe 1983).

To explain the first point further, in general Deg hi'tan and Doy hi'tan men traditionally tended to participate in certain activities such as hunting and trapping; likewise, women tended to focus on certain activities such as fishing and gathering (Osgood 1940, 1958, 1959). However, because flexibility is and always has been a foundation of subsistence (Ellanna and Wheeler 1989; Nelson 1978; Wolfe 1989), these generalizations are just that. Early ethnographic accounts imply that sexual division of labor may have been more rigid than is presently the case (Chapman 1906, 1913; Loyens

1966; Osgood 1940, 1958, 1959; Sullivan 1942). This difference is probably tied to many of the changes listed above (related to mobility) and resultant differing expectations. Thus, gender composition of the population may influence the overall subsistence pattern. Recognition of this factor is important to understanding the relationship between population dynamics and subsistence activities.

That subsistence production and consumption tends to vary on the basis of age is self-evident. Subsistence consumption preferences are often different among older and younger residents. For example, it is quite common to hear that youngsters do not like to eat some subsistence foods, or they eat them only rarely. Also, some foods are considered inappropriate for some age and/or gender groups because of still observed spiritual imperatives (taboos). Again, the point is that consumption habits across an entire village may very slightly on the basis of the age structure of the population.

Additional factors influencing levels of harvest, use, and sharing include health, ability, employment status, etc. For example, in many rural areas, males between the ages of 20 and 59 tend to be the primary hunters. The quantity of big game coming into the community is directly dependent upon these age and sex cohorts. In the four study communities, males in these age cohorts comprise between 22 and 27 percent of the total population. In addition, the high levels of participation in gathering can be attributed to the fact that older and younger people and both men and women are traditionally involved. In contrast, trapping involves a more modest proportion of the population because only males, and generally middle-aged males, participate.

Sharing of Resources

Levels of sharing of resources acquired through hunting, fishing, trapping, and gathering for three of the four study communities are shown in Table 23 (data for sharing in Grayling are not available). This table illustrates several important points. First, in all of the villages, sharing of resources caught by hunting was the highest, ranging from 44 percent in Shageluk to 82 percent of households in Holy Cross. Sharing of fish resources was relatively high too, ranging from 28 percent in Shageluk to 79 percent of households in Anvik. Gathered resources were shared less commonly; and trapped resources were rarely shared, with the exception of Anvik households, in which 42 percent of households shared trapped resources. Not sharing trapped resources is consistent with historic practices, as is noted by Loyens (1966: 57), who in working with the middle Koyukon Athabascans, claims that "...trapped animals were considered as specially belonging to the one who caught them, particularly fur animals..." As well, many people trap for inter- and intra-village commerce, so it may be outside of the bounds of sharing.

Table 23. Percent of Households Sharing Resources Caught by Hunting, Fishing, Trapping, and Gathering in Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

	Percent of Households Sharing Resources Caught By			
	Hunting	Fishing	Trapping	Gathering
Anvik	75	79	42	42
Shageluk	44	28	3	25
Holy Cross	82	67	3	56

While the extent of food sharing networks among hunter-gatherers is sometimes been in dispute (Burch 1988; Myers 1989; Peterson 1993; Testart 1987), there is little doubt that food is commonly shared among hunters and gatherers;[81] and the Deg hi'tan and Doy hi'tan are no exception. Within each resource group, certain resources may be shared more or less commonly; for example, with hunted resources, small game such as ptarmigan might not be shared, particularly if only one or two animals are harvested, while larger animals such as moose and bear are almost always shared. Migratory waterfowl are commonly shared, as are king salmon. In some instances, such as a potlatch, an entire moose may be given for the purposes of the event. Otherwise, parts of the animal are given to certain people, depending upon their relationship (social, political, or economic) to the hunter. These patterns of sharing are consistent with other areas of Alaska and the circumpolar north (Asch 1977; Asch 1988; Bodenhorn 1988; Ellanna and Balluta 1992; Ellanna and Wheeler 1989; Feit 1994; Fienup-Riordan 1994 [1986]; Hensel 1996; Kelso 1982; Loon 1989; Muller-Wille 1978; Nelson, et al. 1982; Nuttall 1991; Palinkas, et al. 1993; Rushforth 1984; Schneider 1982; Tobias and Kay 1994; Usher 1981; Wein and Freeman 1995; Wenzel 1995). While there appears to be little confusion regarding widespread sharing of food among many different groups, and specifically among the Deg hi'tan and Doy hi'tan, sharing items of technology appears to be a more complex situation.

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[81] With regard to food sharing among hunter-gatherers, Service (1979:18) claimed that "... sharing is an expectation of the moral character and a rule of etiquette, as well as the keynote of the value system. A man simply shares because it is the right thing to do..." Further, Dowling (1968:503) noted that "...generosity is almost universally valued..." and Freeman concurs, (1988: 159) stating that "... All hunting and gathering peoples place very high value on food sharing...."

While some have argued that items of technology from snowmachines to camping gear is commonly shared (Bodenhorn 1988; Nuttall 1991). Wenzel (1995) notes the following:

> ... What has come to be generally understood as the traditional socioeconomic system for the sharing of food and at time other types of resources is still extensively practiced at Clyde. This set of behaviors, termed by Damas (1972) with strict regard to food as *ningiq* and more recently, with respect to a wider range of subsistence inputs, as *ningiqtuq* (Wenzel 1991), has come to be widely viewed as a strategy for achieving the widest possible distribution of resources in Inuit communities.... Damas (1972) viewed food as the central good or commodity circulating within the pre contact sharing system. Wenzel (1991) has further suggested that the *ningiqtuq* system had by the late 1960s expanded its material scope to include a number of introduced foods, notably flour, tea and sugar. Moreover, since the 1983 imposition by the European Economic community of its sealskin boycott, even substantial items of technology, such as snowmobiles and small motorized boats, have become incorporated into this exchange system.

Wenzel (1995:50) subsequently qualifies his original assertion:

> "... *ningiqtuq* relations conceptually encompass critical non-food resources, most notably harvesting equipment (firearms, snowmobiles and sleds, outboard engines), gasoline, ammunition and at times, even money.

He claims instead that large scale items of technology are better thought of as being borrowed or shared as a result of demand sharing.[82]

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[82] cf. Myers (1989), Peterson (1993), Wenzel (1995).

Bodenhorn (1988: 82-83) makes the following observation on sharing among the Inupiat of the North Slope:

> ...[F]ood is the most visible category of things that are widely and systematically shared. It is a category in which there are many Inupiaq words to describe the various kinds of sharing, ranging from inviting someone over to eat, sending food portions over to someone else's house, telling a visitor to take meat home, dividing up an animal among those who helped to hunt or butcher, announcing generalized shares for the community, sending shares to relatives or to someone who has helped contribute towards the hunt, giving food to someone who has come to ask for it, or providing meat to a person because someone else has identified them as someone in need. ... Other sharing categories easily encompassed by a non-Inupiat scheme might include money, time or labor, equipment and other goods, a place to stay, or storage space or an ice-cellar. There are other things which are important to share... I emphasize here that sharing remains not only a pragmatic and social activity, but continues to carry with it significant moral weight.

Much like the Inupiat, sharing food, and to a lesser extent, equipment among and between the Deg hi'tan and Doy hi'tan residents of Grayling, Anvik, Shageluk, and Holy Cross is not only pragmatic and social, but a moral and cultural imperative.[83]

Sharing food outside of the village, while occurring less frequently than intra-village sharing, is nonetheless an important aspect of subsistence. Sharing typically occurs with kin who are temporarily or permanently away from the village. It is common for food items to be sent as far away as Anchorage and Fairbanks. Often, when individuals are attending school or working away from the local community, they are sent "care packages." Field estimates indicate that on average the amounts are small, and probably total from 5 to 15 percent of the total harvest. Individuals indicated that the foods which are sent are as important for their nutritional value as they are for their ideological value. In the four communities, both inter- and intra-village sharing are vital, integral parts of using subsistence resources.

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[83] Nelson (1978, 1983; Nelson, et al. 1982) provides an extensive account of the importance of sharing of subsistence resources by Koyukon Athabascan people.

Cash Costs of Subsistence

> In short, changes in technology have meant that most subsistence equipment is purchased. Inflated prices have essentially turned equipment into another scarce resource....In a society that depends on hunting for its social as well as physical survival, access to the tools of hunting is critical (Bodenhorn 1988: 228-232)

Equipment

As the above quote indicates, "access to the 'tools of hunting is critical." In the communities of Grayling, Anvik, Shageluk, and Holy Cross, the majority of sampled households had access (primarily through ownership) to the equipment necessary to participate in subsistence. Table 24 provides the percentage of households owning major items of equipment needed for subsistence in the sampled households.

Table 24. Percentage of Sampled Households Owning Equipment, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

Type of Equipment	Percentage of Households Owning in Grayling	Anvik	Shageluk	Holy Cross
Snowmachine	85.4	79.2	71.9	76.9
Boat	73.2	62.5	43.8	74.4
Outboard Motor[84]	73.2	66.7	50.0	71.8
Rifle	85.4	83.3	62.5	76.9
Traps	53.7	70.8	40.6	53.8
Snares	46.3	62.5	25.0	41.0
Set Nets	58.5	66.7	50.0	51.3
Chain Saw	92.7	75.0	75.0	66.7

As illustrated, from 71.9 percent of the households in Shageluk to 85.4 percent of the households in Grayling owned snowmachines, a vital item of equipment both for merely 'getting around' as well as for active participation in subsistence. Another item of equipment critical for active participation in resource harvesting is a rifle: from 62.5 percent of the households in Shageluk to 85.4 percent of the households in Grayling owned a rifle.

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[84] The term 'kicker' is commonly used to refer to an outboard motor; it is widely used by local people and anthropologists in describing this form of technology.

Chainsaws are clearly an important item of technology to own: ownership ranged from a high of 92.7 percent of the households in Grayling to a low of 66.7 percent of the households in Holy Cross. To a certain extent, ownership of a particular item of technology may be determined by its cost; whether it is critical for participation in subsistence; and access to the item through other means, such as borrowing. In the four communities, however, it does not appear that borrowing is utilized by many households as a means of gaining access to technology. Table 25 provides the percentages of sampled households borrowing technology.

Table 25. Percentage of Sampled Households Borrowing Equipment in Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

Type of Equipment	Percentage of Households Borrowing in Grayling	Anvik	Shageluk	Holy Cross
Snowmachine	4.9	4.2	3.1	0.0
Boat	12.2	16.7	6.3	2.6
Outboard Motor	7.3	12.5	6.3	2.6
Rifle	7.3	0.0	3.1	5.1
Traps	12.2	0.0	3.1	0.0
Snares	9.8	0.0	3.1	2.6
Set Nets	24.4	8.3	9.4	5.1
Chain Saw	4.9	0.0	6.3	0.0

Of all items of technology, boats, outboard motors, and set nets are the most frequently borrowed. In contrast, on the basis of the above information, snowmachines, rifles, snares and traps, and chain saws are not consistently borrowed. That people don't borrow chain saws is likely explained by the fact that ownership is common, and there is no need. People do not borrow snares and traps because they are considered to be personal items, and they are not commonly shared with anyone. Also, because traplines are commonly 'handed down,' the traps themselves are handed down, too; and they are not considered to be 'borrowable." Snowmachines are infrequently borrowed, largely because they are so important to day to day travel, and immediate access is essential to their owners.

Finally, rifles are not commonly borrowed, in large part because most households own one; and second, because rifles, like traps, are considered personal items. The relatively high incidence of borrowing of boats, outboard motors, and set nets can be explained by the fact that use of these items is usually short term and sporadic; and the purpose is clear. That is, when an individual who owns a boat gets his or her fish, s/he will often lend their equipment to others who do not own the equipment, sometimes for a percentage of their harvest, sometimes for payment in gas. Individuals who borrow equipment almost always have to pay for their own gas.

As is noted by Bodenhorn in the above quote, the vast majority of essential subsistence equipment is imported. While not always the case, as the continued use of fishwheels and the rare instance of handmade snares illustrates, for the most part, efficient and effective participation in subsistence (and in some cases, mere participation) requires access to imported technology. While it is not always critical to own the technology, as the previous discussion points out, the vast majority of technology that is used in participating in subsistence by residents of the four communities is purchased outside of the communities.

Most of the snow machines, outboard motors, and three and four-wheel all terrain vehicles utilized in the four communities at the time of the study were purchased from the Yamaha dealer in Aniak. A small number were shipped in from Fairbanks or Anchorage. Boats were typically purchased in Anchorage or Fairbanks, and barged in during the summer months. Other items, such as set nets, rifles, chain saws, traps, etc. which are vital to subsistence are generally purchased through mail order from firms in Anchorage. Shipping and freight charges can add over half the original value of the item to its price (depending on the weight of the item and the method of shipping).

Subsistence equipment can be subdivided into two categories: 'large' items of technology, which include snow machines, boats and outboard motors; and 'small' items of technology, which include rifles, traps, snares, set nets, and chain saws. Minimum, maximum, and mean costs of these items is presented in Table 26.

Table 26. Minimum, Maximum, and Mean Cost of Subsistence Technology Utilized by Sample, 1990-1991 (Source: Field Data).

Item of Technology	Number Held by Sample	Minimum Cost ($)	Maximum Cost ($)	Mean Cost ($)
Snowmachine	108	800	10,500	3272
Boat	88	250	10,000	2555
Outboard Motors	92	200	20,000	3029
Rifle	101	35	1900	361
Traps	70	5	800	279
Snares	54	1	5400	193
Set Nets	80	74	4800	728
Chain Saw	106	135	2540	387

As is illustrated, large items of technology represent a considerable investment. Based on individual reports, snowmachines used by residents of Grayling, Anvik, Shageluk, and Holy Cross averaged about $3,272.35, with a minimum cost of $800 and a maximum cost of $10,500. Average costs of outboard motors was slightly less, estimated at about $3,028.80, with a maximum cost of $20,000 and a minimum cost of $200.00. Finally, while the average cost of boats was estimated to be about $2,555.11, the maximum reported cost was $10,000 and the minimum was $250.00. Based on this information, a person would spend a minimum of $1,500 and a maximum of $55,940 if they were to buy all of the items of technology listed above: clearly, investment in all the items of technology necessary to participate fully in subsistence is substantial.

The equipment used by residents of the four communities for subsistence purposes during the period September 1990 through August 1991 represented a cash outlay of over $1 million. While the majority of this equipment was purchased during a ten-year time span[85] (1980-1991) it nonetheless represents a substantial financial contribution towards subsistence, particularly in light of the relatively low household incomes discussed earlier in this chapter. The relative percent of the total amount of money spent for each major item of subsistence equipment used in 1990-1991 is provided in Figure 10.

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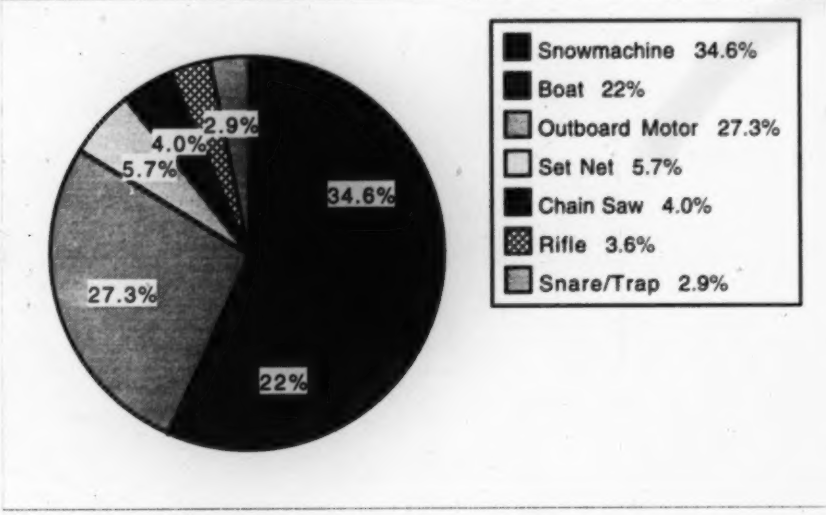
[85] 84.4% of the snowmachines in the sample were purchased between 1987-1991; 70.6% of the boats in the sample were purchased between 1985-1991 (49.9% were purchased between 1987-1991); 68.6% of the

Figure 10. Capital Investments in Subsistence Equipment Used by Residents of Grayling, Anvik, Shageluk, Holy Cross, 1990-1991.



More than one-third of the overall outlay was directed at snow machines, 27 percent was directed at outboard motors and 22 percent on boats. While these items are so-called "big-ticket" items, which may be considered luxury items by many non-rural consumers, ownership of or access to them are essential for effective and efficient participation in subsistence. Lesser priced items such as snares, traps, rifles, chain saws, and set nets constituted approximately 16 percent of the overall subsistence equipment expenses. Likewise, ownership of or access to these items is critical to participation in hunting, fishing, trapping, and even gathering (i.e., wood cutting).

The expense of owning and operating critical subsistence equipment well illustrates the need for cash and the vital role of wage labor, other cash generating activities, and

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kickers were purchased between 1987-1991. The prices listed above are the actual prices paid at the time of purchase. Appendix E provides the year and frequency of purchase for snowmachines, boats, and kickers; and Appendix F provides that same information for smaller items of technology.

transfer payments in the economic system. In light of the relatively limited local opportunities for earning cash, and the unpredictable and sporadic nature of cash, that so much cash is spent on subsistence equipment is illustrative of the importance of subsistence to local people. Usher (1976b: 16) offers the following explanation for the Inuit:

> Hunting as an expression of cultural identity is of profound importance to the Eskimo and is sometimes engaged in even when it is clearly uneconomic. The large proportion of total cash spent by almost all men on hunting, trapping and traveling gear, even if these tools do not provide their chief source of income, are indicative of their commitment to a land oriented way of life. Further, country food, and the ethics and values associated with obtaining, sharing and eating it, are of profound significance to Native people.....

The seemingly "un-economic" (at least to the western eye) approach to (cf. Bodenhorn 1988: 232) equipment and cash expenditure on the part of local people in the four communities is illustrative of the importance and value of this way of life. It also points to the need for alternative strategies to attain cash and imported technology.

The expense of imported equipment has also turned it into a potentially scarce resource . The availability of large amounts of cash at certain times of the year (i.e., the Alaska Permanent Fund dividend, or payment at the end of a "good"[86] fire season) provides an opportunity to invest in technology. With the exception of the Alaska Permanent Fund dividend, however, these occasions are typically sporadic; and cannot always be counted on. When the opportunity presents itself, and enough cash is available, it is not uncommon for people to invest in snowmachines or outboards. While some might consider the investment in technology to be short-sighted, for subsistence hunters, fishers, trappers, and gatherers it is a critical investment in their way of life.

It is important to note that increasing competition for resources from outside user-groups has resulted in higher equipment costs for local people. In order to compete successfully for fewer resources, local people are forced to invest in more efficient and thus more expensive technology. Local resource use areas necessarily expand as a response to outside pressures: with increasingly larger resource use areas, more efficient tools and technology are necessary for continued production. Thus, while production does not appear to be growing, costs related to production are increasing.

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[86] A "good" fire season refers to a season (summer) where village crews are called out for extended periods of time to fight fires. Typically a person can earn $1,500/week with overtime. In a good fire season a person can be out for a month.

Gas/Non-Equipment Costs

In addition to capital investments, there are variable costs of gas, oil, and ammunition, as well as items such as sleeping bags, tents, store-bought food, etc. associated with hunting, fishing, trapping and gathering. The cost of repair items (everything from new skis and tracks to spark plugs and gaskets) are also reflected in non-equipment costs. Data on these costs point to some interesting patterns, as shown in Figure 11.

For the four communities, a household average of over sixteen hundred dollars ($1,683.31) was spent on non-equipment costs. Of this amount, a household average of $544.51 was spent on hunting and an average of $443.63 was spent on fishing. Average non-equipment household expenses on trapping and gathering were roughly comparable, with the former at $368.02 and the latter at $389.47. Given the average household income in the four communities ranged between $10,694 in Anvik to $21,641 in Grayling, these expenditures are not insignificant.

Figure 11. Average Annual Household Non-Equipment Expenses Associated with Subsistence Activities in Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

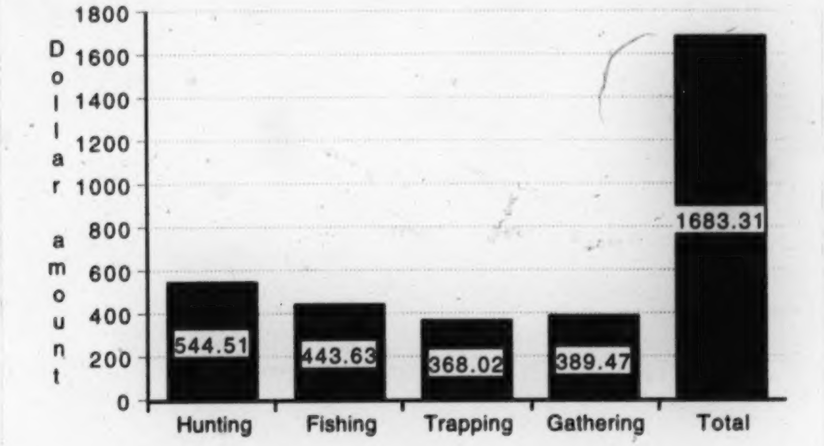
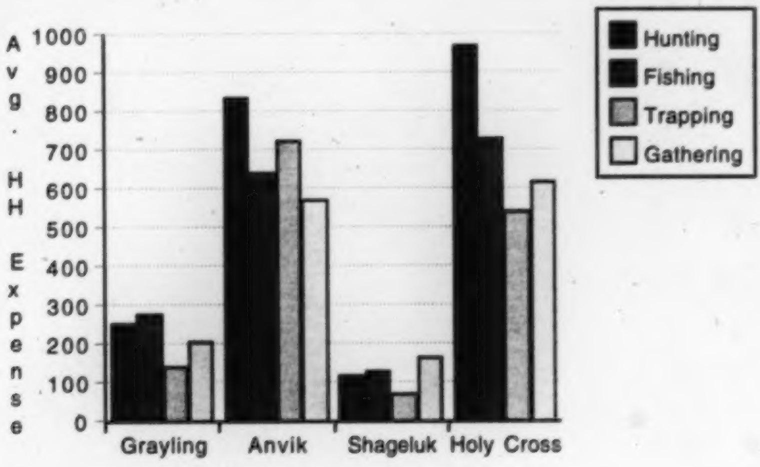


Figure 12 provides information on average non-equipment household expenditures associated with hunting, fishing, trapping, and gathering for each of the four communities. The data point to the high non-equipment costs associated with hunting and fishing. In two of the four communities (Anvik and Holy Cross) average household expenditures for hunting were the highest; and in Grayling, mean household expenses in fishing were highest. Shageluk reported that expenses related to gathering were highest, although this is somewhat anomalous, as gathering typically occurs in conjunction with other activities. Given the higher expenses tied to hunting and fishing, it is interesting to note large game accounted for the highest percent of the total harvest in both Anvik and Holy Cross, and fish accounted for the highest percent of the total harvest in Grayling.

Figure 12. Average Non-Equipment Household Expense on Hunting, Fishing, Trapping and Gathering by Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).



On average, households expended far more on each activity in Anvik and Holy Cross compared with Shageluk and Grayling. Higher expenditures were not necessarily tied to higher harvests, however, as the total harvest was higher in Grayling than in any of the four communities. It may be that expenditures below a certain point are related to low harvest or low productivity, as Shageluk seems to illustrate.[87]

Figure 13 compares the average household non-equipment expense with the average household harvest for hunting, fishing, trapping, and gathering for the four communities. As the figure illustrates, Grayling had the highest mean household harvest, and the second lowest average household expenditure. Anvik had the second highest mean household harvest, and the second highest mean household expenditure. Shageluk had the lowest mean household harvest, and the lowest household expenditure. Holy Cross had the highest mean household expense, and the second lowest mean household harvest. The pattern is essentially the same with hunting and fishing, as Figures 14 and 15 illustrate.

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[87] If cash is viewed as a resource which accommodates utilization of harvesting other resources, this is true. However, the acquisition of cash requires time which could be utilized for harvesting other resources. There might be a threshold at which resource harvest begins to decline significantly as cash resources increase. Alternatively, further investment in subsistence maintains or increases production despite less time availability, as suggested by Freeman (1986), and Kruse (1986, 1991).

Figure 13. Comparison of Average Household Non-Equipment Expenditure on Subsistence Activities versus Mean Household Harvest of all Resources, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

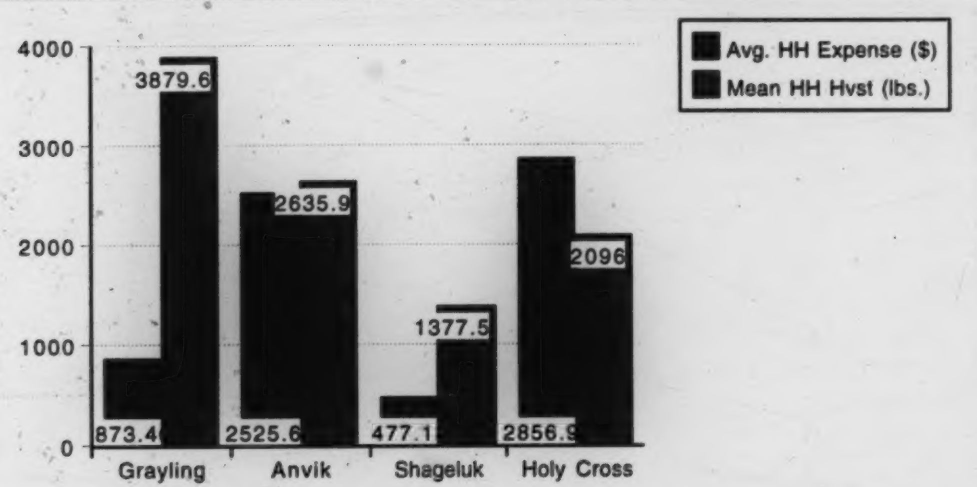


Figure 14. Comparison of Average Household Non-Equipment Expenditure on Hunting versus Mean Household Hunting Harvest for Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

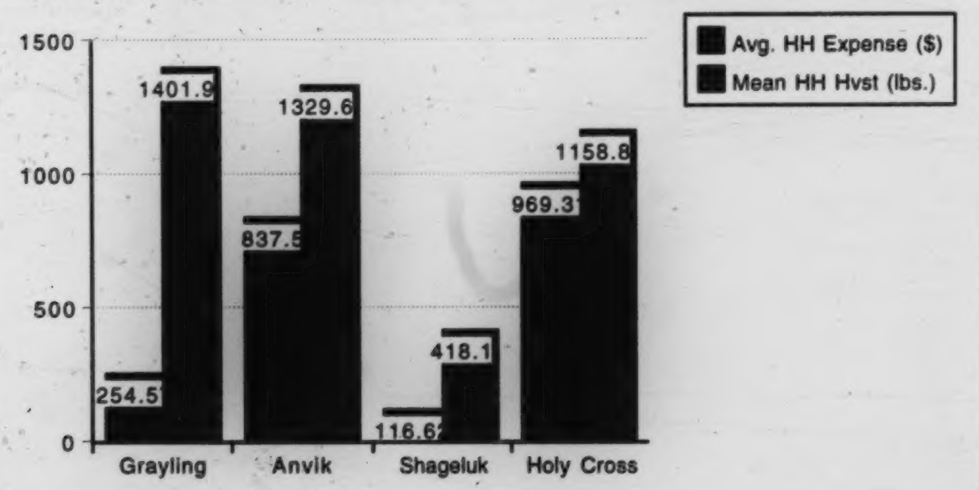
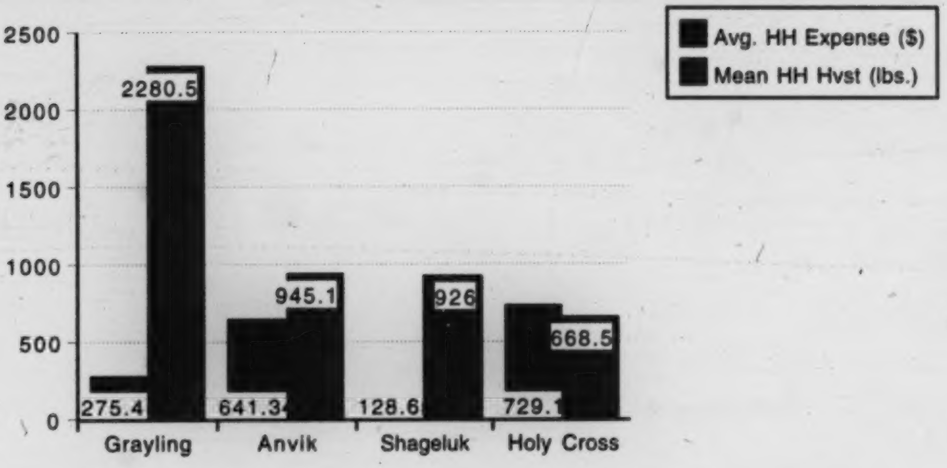
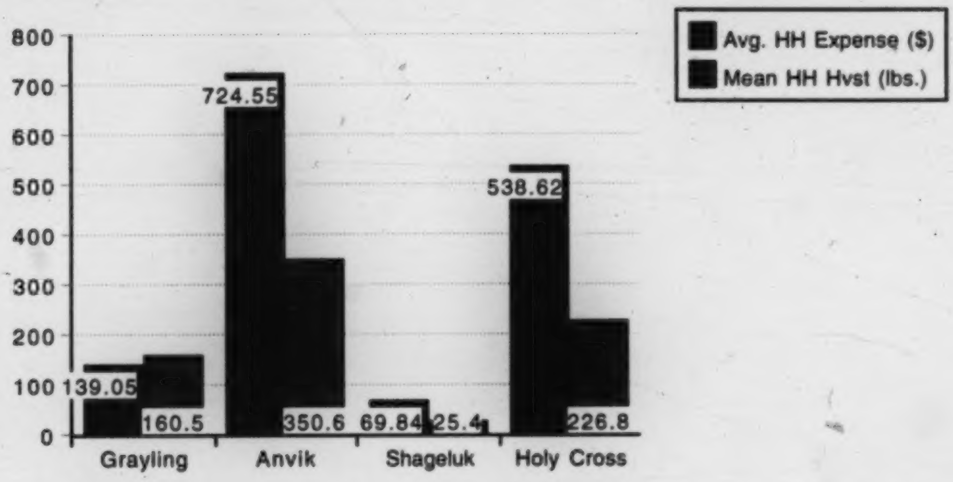


Figure 15. Comparison of Average Household Non-Equipment Expenditure on Subsistence Fishing versus Mean Household Harvest of Fish for Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).



Interestingly, for trapping there is a direct correspondence between expenditure and harvest, as Figure 16 shows. To explain, Anvik had the highest mean household harvest of fur bearers and also the highest mean household expense, whereas Shageluk had the lowest harvest and the lowest expense for trapping. Similarly, Holy Cross and Grayling had the second and third mean highest harvest and expense.

Figure 16. Comparison of Average Household Non-Equipment Expenditure on Trapping versus Mean household Harvest of Trapping for Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).



Mean household expenditures are related to the particular resource areas utilized, the distances traveled, the kind and quantity of ammunition used, among other things (i.e., length of trip, duration of time spent out of the community (on the land), need to purchase other food and material supplies).[88] There is a relationship between expenditures and harvests because below a certain point, if little is expended than little will be harvested, as Shageluk illustrates. On the other hand, high expenditures do not necessarily guarantee high harvests.

Clearly, access to cash and the equipment and supplies it can buy are important to efficient and effective participation in subsistence activities. Cash and the equipment and supplies it can buy can be viewed as resources which, as with all resources, must be respected. While it can be managed, there is a degree of arbitrariness to its availability-- as with all resources. The sporadic and often seasonal availability of cash parallels the sporadic and seasonal availability of all resources. When it is present; it is used, and typically used to the maximum extent possible (within locally prescribed parameters, as discussed in Chapter Seven). A reduction in cash flow or the absence of a particular resource will not cause the subsistence system to discontinue operation, although it will cause a reliance on other resources, or on the social network, to provide the resources or equipment necessary for the cycle to continue. The majority of subsistence systems in rural Alaska are regularly compromised by a shortage of resources, not the least of which are cash and imported equipment. The four communities of Grayling, Anvik, Shageluk, and Holy Cross are no different. People in these communities manage their cash and equipment as they do all resources: opportunistically, creatively, and with care.

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[88] An aspect of resource use which was not measured and consequently is not reflected in Figures 11-16 is opportunity costs; that is, what one gives up in order to harvest certain resources. This is a valuable area for further study, as it is likely an important factor in resource use. However, in assessing opportunity costs one must decide whether to consider them from an emic or etic perspective, as they no doubt will vary accordingly.

Conclusion

The demographic profiles and average household sizes of Grayling, Anvik, Shageluk, and Holy Cross are typical of rural Alaska. As noted, the Alaska Native population tends to be younger than the non-Native population, males tend to outnumber females, and most communities are weighed towards the younger age cohorts. Consistent with these population parameters, average household sizes tend to be larger than the non-rural population. The average household size in the four communities was 3.5, compared with a statewide average of 2.9 people. Grayling supported the largest average household size of 4.3, compared with a low of 3.1 in Anvik. In addition to having the largest and smallest average household size, Grayling and Anvik supported the highest dependent population ratio (about 50 percent). The high dependent ration is, as might be expected, consistent with the rural population profiles.

Wage employment in all four communities was limited. Overall, there were few full-time year round positions; the majority of employment was part- time and/or seasonal. In addition to providing food resources, commercial trapping and fishing provided an important source of cash to some people. Transfer payments were also a substantial periodic or seasonal cash resource.[89] Household income levels varied within and between communities; a high household average income of $21,641 was reported for Grayling, and a low of $10,694 was reported for Anvik. According to the 1990 census, 12.6 percent of the population in Grayling lived below the poverty level, as compared with 45 percent in Anvik, 35 percent in Shageluk, and 48.8 percent in Holy Cross.

In spite of often large differences in household income levels, average capital investments and non-equipment expenditures on subsistence such as gas, oil, and supplies were relatively comparable between communities. Capital investment in equipment was significant, as was investment in non-equipment costs. As much as anything else, the investment is testimony to the importance of the subsistence way of life.

While varying within and between communities, overall participation in hunting, fishing, trapping, and gathering was high. From 75 to 88 percent of the households in the four communities participated in hunting; 69 to 90 percent participated in fishing; 37 to 71 percent participated in trapping, and 77 to 98 percent participated in gathering. All households attained some food resources, as food resources were commonly shared, and equipment was either shared or loaned.

As this discussion has indicated, demographic characteristics offer valuable insight into resource use. The interdependence between community demographics and resource use results in the dynamic entity of subsistence. As Kelso (1982: 6) states: "... Use of locally available resources -although dynamic- is so well established in many areas of Alaska that human communities may be properly viewed as integral parts of the ecosystems in which they participate." Clearly, understanding the demographics of the human population is important to understanding resource use, as population composition is an important factor driving subsistence use of resources.

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[89] As noted earlier in the chapter, the number and amount of monthly payments are based on prior months income-- thus it is possible to "look back" based on payment data.

The economy of the area is a complex mix of subsistence and cash, and imported or non-indigenous material culture. Continued viability of communities relies upon the creative and flexible use and management of all of these components. As in most of rural Alaska, the communities of Grayling, Anvik, Shageluk, and Holy Cross are temporally and spatially highly dynamic; changing through time largely in response to fluctuations in the annual, seasonal material and subsistence resource base. In addition to their inherent flexibility and adaptability, the communities are characterized by a highly complex social and spiritual order, which is intimately tied to the dependence on resources.

The flexible and dynamic nature of the four communities is illustrated in part by the incorporation of imported, western technology, as well as cash. Rather than representing a rejection or loss of traditional and customary values, or alternatively, a subordination of those values to those of western society (as has been commonly argued), cash and imported technology, once in the subsistence system, are transformed. No longer representing external destructive forces, cash and imported technology are joint resources, along with food resources, in the economic system. Temporary wage labor jobs also serve as resources to be exploited. Often, jobs are not valued in and of themselves (as is common in western society), but rather as a means to an end. Temporary wage labor thus fits in or works in the rural economy. From an emic perspective, jobs, cash, equipment, and food are all parts of the same world of resources-- in a sense, all are there to be utilized as changing seasonal and social imperatives dictate.

The contemporary economies of Grayling, Anvik, Shageluk, and Holy Cross have a long history of flexibility and adaptability, testimony to their continued viability in the face of constant change. Their inherent adaptability is illustrated by their internalization of cash as a resource, which is managed and treated as one of the many resources within the system. At times, cash and the imported equipment it so commonly buys are limited; and at times they are not. When cash is limited, expenditures are minimized; and other resources are maximized. Similarly, when cash is commonly available, for example, after a 'good' fire fighting season or when Alaska Permanent Fund dividend cheques are received, expenditures tend to be high; and the focus on other resources may not be as intense. In a sense, when cash is available, investment in the necessary equipment required for efficient subsistence utilization effectively banks or caches a resource (cash) for future use. Similarly, when moose or fish is in large supply, the meat is banked for future use by being made into dry meat or dried fish. The resource form is changed (fresh meat to dry meat; cash to boats, snow machine, etc.) to accommodate future use. Viewed within a common framework, household monetary income and subsistence yield (resources harvested) are complementary aspects of a single system; i.e., the total economy of the communities.

CHAPTER FIVE:
Deg Hi'tan and Doy hi'tan Wild Resource Use

The North may well be the only place where a poor man's table is laden with meat as a matter of course (Usher 1976b: 12).

Introduction

Dependence upon a wide variety of resources, referred to as "resource diversity,"[90] is one of the hallmarks of subsistence economies. As Wolfe (1991a: 1) explains, the importance of resource diversity is multifold:

> ..... [F]amilies commonly utilize a relatively large number of wild resources as part of a traditional subsistence use pattern. One reason is cultural preference for the tastes of traditional wild foods in one's diet. Typically, people who depend on wild resources become accustomed to the tastes of the wild foods which are available in their local areas. A wide diet selection is more likely to include essential nutrients than a narrower diet, which is beneficial to the individual's health. In northern latitudes where wild resources show substantial natural fluctuations in availability over time, utilizing a wide range of wild resources is undoubtedly an adaptive economic strategy.... When particular wild resources fail, the social group may substitute others. A diverse resource harvest also holds more possibilities for sharing and exchange between communities, which are adaptive for local groups in times of resource scarcity.

Utilization of varied resources is influenced by ecological and environmental factors which directly affect resource availability. Use of and dependence on these same resources is also directly affected by individual and community preference. Clearly, availability and preference cannot be addressed in isolation; that is, resource availability or lack thereof may contribute to a resource being a preferred food source. For example, after eating fish all summer and fall, the variety offered by moose or berries would be welcome. Likewise, spring duck hunting, while yielding relatively low productivity and requiring substantial effort, nonetheless is highly valued for both ecological/environmental reasons and in terms of community preferences.

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[90] Wolfe (1991a: 1) notes, "... one characteristic of a subsistence use pattern is relatively wide resource diversity. "Resource diversity" is the number of different kinds of wild resources used by families for food, raw materials, and other subsistence uses during a year.

In discussing contributions of various food resources to the overall diet, it is important to note that it is difficult to place a "value" on a particular food resource, as "value" in a subsistence economy is highly relative. "Value" is conditioned by annual environmental and ecological changes, seasonal availability, amounts available (i.e., 1,000 pounds of moose, versus 10 pounds of porcupine versus five pounds of berries), and personal preference.[91] Also, because specific parts of certain animal are prized above all others, this preference can affect the notion of "value."[92] For the purposes of this discussion, I refer to resources as staple resources, with the understanding that in time, what constitutes a staple resource will likely change. Just as subsistence systems are diachronic in nature, so is the resource base variable through time. A glimpse or snapshot of a subsistence system at a single point in time is a static representation of an ever-changing system. The only static element is the reliance on and use of a wide variety of resources. In light of this, we turn to a discussion of the variety and amounts of subsistence resources harvested in 1990-1991 by residents of Grayling, Anvik, Shageluk, and Holy Cross. Throughout the chapter, as specific resources are discussed, the areas used by residents of the four villages for harvesting will also be presented and discussed.

During the course of this discussion, the resources harvested are presented in a table format which provide estimates of the percent of households harvesting the particular resource, the edible pounds harvested,[93] the mean harvest per household, and the per capita harvest. All of these amounts are based on the field data, collected in 1990-1991, extrapolated to include all members of the community according to the 1990 census. The major resource categories used include fish, which is comprised of salmon[94] and non-salmon; land mammals, which is comprised of large and small land mammals; birds; and plants and berries. Placing resources into categories is done for ease of discussion, and does not necessarily reflect emic perceptions of resources. Likewise, discussing resources in the context of pounds harvested is done for discussion purposes; and does not represent an emic means of organization or understanding.

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[91] Personal preference is also further influenced by demographic factors, where an individual was raised and by whom, what an individual is used to, as well as generational factors (i.e., older people tend to prefer foods that are higher in oil content, and they also tend to favor fermented and/or aged foods more than younger generations.)

[92] Freeman (1988: 152) notes that for the Inuit, "... monotony in diet is overcome to some extent by the complete utilization of most of the animals harvested and the different means in food preparation. Whereas to a non-Inuk, a seal is a seal, in the Inuit view seals are distinguished by food preference by species and by age-class and sex within species."

[93] The conversion factors used to compute the edible pounds harvested for each resource are included in Appendix G.

Harvest Summaries

Tables 27-30 provide harvest summaries and Figures 17-20 provide an illustration of the relative percentage of major subsistence food resource categories harvested for subsistence by weight by the residents of Grayling, Anvik, Shageluk, and Holy Cross.

One hundred percent of the households in Grayling fished for salmon and non-salmon species, and harvested plants and berries. In addition, 82.9 percent of the households in Grayling harvested land mammals, and 85.4 percent of the households harvested birds. An estimated total of 182,343 edible pounds were harvested by residents of Grayling, averaging out to a household mean harvest of 3,879.6 pounds, and a per capita harvest of almost 900 pounds. Fish, specifically salmon, comprised well over half of the edible pounds of resources harvested. Nearly evenly divided between large and small mammals, land mammals comprised more than one third (37 percent) of the total harvest. Birds and plants and berries provided the smallest contribution to the total harvest.

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[94] I did not differentiate between commercially-caught and subsistence caught salmon when conducting the data collection. It was not until I was doing the analysis that I realized the impact of this lack of differentiation. To help make this distinction, I used data from a study conducted by the Alaska Department of Fish and Game, Division of Commercial Fisheries (Bromaghin and Hammer 1993). The study collected data on salmon caught for subsistence purposes. The study was conducted during the study year of 1990-1991; and though it was based on a different sampling methodology, I felt the numbers were comparable.

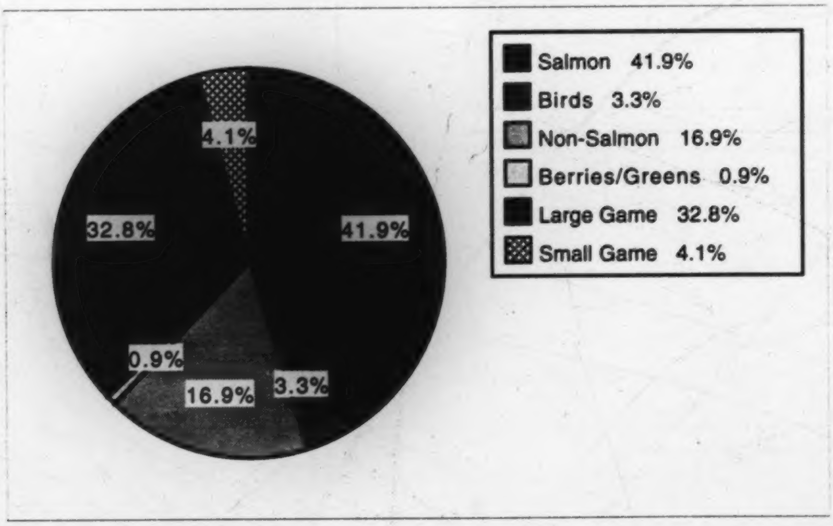
Table 27. Subsistence Resource Harvest Summary for Grayling, 1990-1991 (Source: Field Data).

	Estimated Community Totals for Grayling			
	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
All Resources	100.0	182,343	3,879.6	893.6
Fish	100.0	107,182	2,280.5	525.3
Salmon*	100.0	76,358	1,624.6	374.2
Non-Salmon	100.0	30,824	655.8	151.1
Land Mammals	82.9	67,401	1,434.1	330.0
Large Land Mammals	78.0	59,856	1,273.5	293.3
Small Land Mammals	56.1	7,545	160.5	37.0
Birds	85.4	6,035	128.4	29.6
Plants and Berries	100.0	1,725	36.7	8.5

* Estimates based on Commercial Fisheries (Bromaghin and Hammer 1993).

Of the total pounds of food resources harvested in Grayling, salmon comprised almost 42 percent, large game comprised almost 33 percent, and non-salmon species comprised almost 17 percent. Small game, birds, and vegetation comprised less than ten percent of the total harvest.

Figure 17. Relative Percentage of Total Resources Harvested by Weight, Grayling, 1990-1991.



Almost 92 percent of the households in Anvik harvested subsistence food resources of some kind. Slightly fewer households (87.5%) fished, and 79.2 percent of the households harvested land mammals. Finally, 83.3 percent of the households harvested birds and plants and berries.

An estimated total of 81,714 edible pounds were harvested by residents of Anvik, providing a household mean harvest of 2,635.9 pounds, and a per capita harvest of 843.5 pounds. Anvik and Grayling were roughly comparable in terms of pounds per capita harvested. However, in contrast to Grayling, in which fish comprised well over half of the amount of resources harvested, fish comprised just over a third of the amount harvested in Anvik. Land mammals comprised almost two thirds (59 percent) of the total harvest, and large land mammals accounted for almost half of the total harvest. As in Grayling, birds and plants and berries provided the smallest contributions to the harvest.

Table 28. Subsistence Resource Harvest Summary for Anvik, 1990-1991 (Source: Field Data).

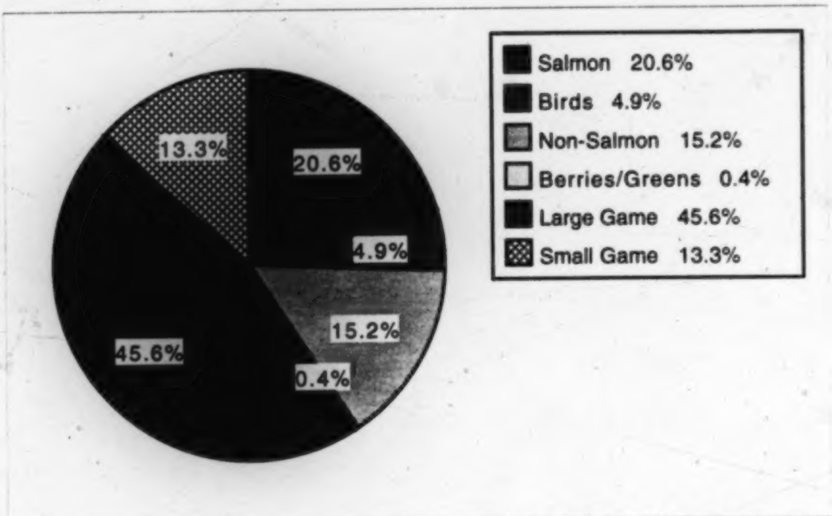
	Estimated Community Totals for Anvik			
	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
All Resources	91.7	81,714	2635.9	843.5
Fish	87.5	29,298	945.1	302.4
Salmon*	83.3	16,838	543.2	173.8
Non-Salmon	79.2	12,460	401.9	128.6
Land Mammals	79.2	48,120	1,552.3	496.7
Large Land Mammals	75.0	37,252	1,201.7	384.5
Small Land Mammals	70.8	10,868	350.6	112.2
Birds	83.3	3,966	127.9	40.9
Plants and Berries	83.3	331	10.7	3.4

* Estimates based on Commercial Fisheries (Bromaghin and Hammer 1993).

In contrast to Grayling, large game comprised almost 46 percent of the total pounds harvested in Anvik; and salmon comprised less than half of that. Non-salmon comprised just over 15 percent, and small game roughly 13 percent of the total pounds harvested by

Anvik residents. Birds and vegetation comprised just 5.3 percent of the total pounds harvested.

Figure 18. Relative Percentage of Total Resources Harvested by Weight, Anvik, 1990-1991.



Almost 94 percent of the households in Shageluk harvested some resources, although the total pounds harvested was considerably less than the other three villages. An estimated total of 55,099 edible pounds were harvested by residents of Shageluk, which averaged out to a household mean harvest of 1,377.5 pounds and a per capita harvest of 445.2 pounds (almost half of the per capita harvest of Grayling residents). The smaller harvest can be explained in part by fewer households fishing in Shageluk compared with households in the three other communities.[95] Just over half of the households in Shageluk fished, compared with 100 percent in Grayling, 87.5 in Anvik, and 71.8 percent of the households in Holy Cross. In addition, fewer households in Shageluk hunted land mammals, compared with the other three villages. Finally, less than half of the households in Shageluk hunted birds; but 93.8 percent gathered berries and plants.

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[95] As has been mentioned previously, Shageluk is the only one of the four villages not located on the Yukon river. Rather, it is on the Innoko River, a tributary of the Yukon river. It is less ideally situated for salmon fishing, although all of the other non-salmon species are easily accessible. In fact, the Innoko River is home to several whitefish runs, which people from Grayling and Anvik come to exploit.

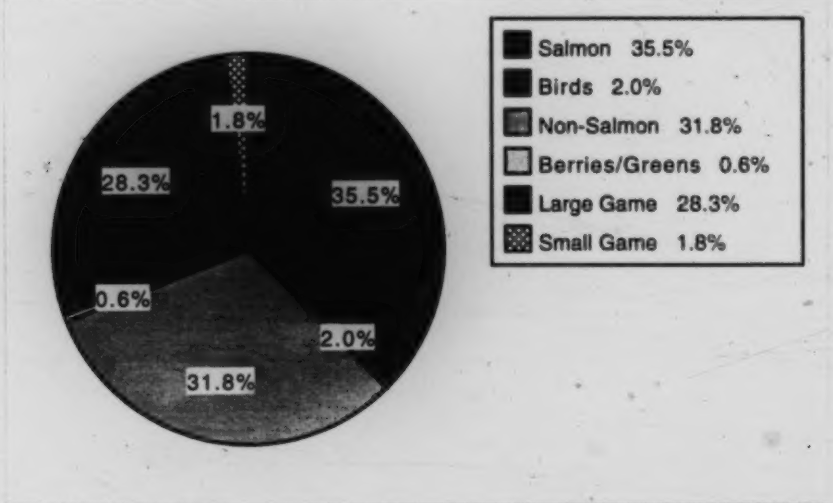
Table 29. Subsistence Resource Harvest Summary for Shageluk, 1990- 1991 (Source: Field Data).

	Estimated Community Totals for Shageluk			
	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
All Resources	93.8	55,099	1,377.5	445.2
Fish	56.3	37,038	926.0	299.3
Salmon*	50.0	19,536	488.4	157.9
Non-Salmon	56.3	17,502	437.6	141.4
Land Mammals	50.0	16,618	415.4	134.3
Large Land Mammals	37.5	15,600	390.0	126.1
Small Land Mammals	25.0	1,018	25.4	8.2
Birds	43.8	1,123	28.1	9.1
Plants and Berries	93.8	320	8.0	2.6

* Estimates based on Commercial Fisheries (Bromaghin and Hammer 1993).

About evenly split between salmon (53 percent) and non-salmon (47 percent), fish comprised 67 percent of the edible pounds harvested in Shageluk. About one third of the total harvest was attributable to land mammals; and, as with all other communities, birds and plants and berries comprised a fraction of the total edible pounds harvested in Shageluk. As in Grayling, salmon were the largest percentage of the total harvest in Shageluk, comprising roughly 35 percent of the total edible pounds harvested. Non-salmon species accounted for approximately 32 percent of the total harvest. Large game (28.3 percent) and small game (1.8 percent) contributed a total of approximately 30 percent of the edible pounds harvested, and birds, eggs, berries, and greens comprised almost 3 percent of the total pounds harvested.

Figure 19. Relative Percentage of Total Resources Harvested by Weight, Shageluk, 1990-1991.



Just under 90 percent of the households in Holy Cross harvested some resources. Participation rates ranged from a low of 64 percent of the households which fished for salmon, to a high of 82 percent of the households which collected berries and greens. Fishing for both salmon and non-salmon species was an activity in which 71.8 percent of the households participated, and fish comprised roughly 32 percent of the total harvest. Of the edible pounds of fish harvested, 60 percent was salmon. Roughly 80 percent of the households in Holy Cross hunted large or small land mammals. Almost 70 percent of households hunted birds, and 82 percent gathered berries and greens. As with the other three communities, birds and plants and berries comprised a small fraction of the food harvested. An estimated total of 173,969.3 edible pounds were harvested by residents of Holy Cross, which averaged out to a household mean harvest of 2096.0 pounds, and a per capita harvest of 633.7 pounds.

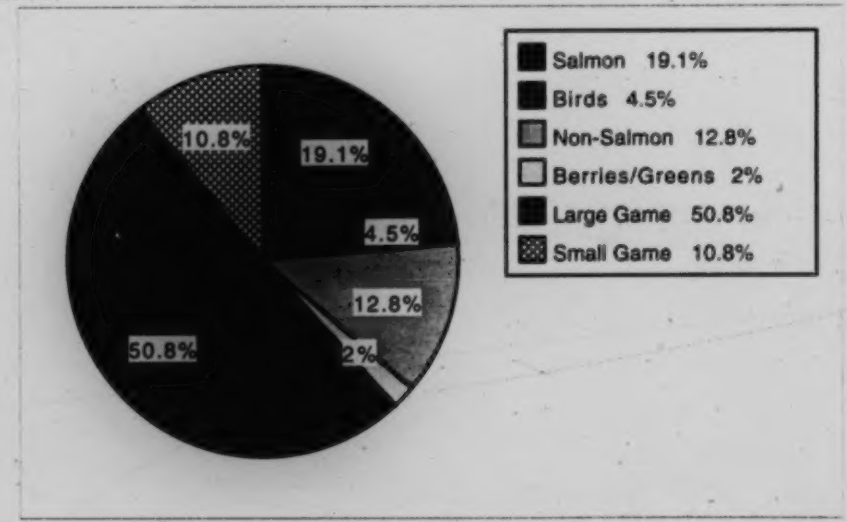
Table 30. Subsistence Resource Harvest Summary for Holy Cross, 1990-1991 (Source: Field Data).

	Estimated Community Totals for Holy Cross			
	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
All Resources	87.2	173,969	2,096.0	633.7
Fish	71.8	55,487	668.5	202.1
Salmon*	64.1	33,269	400.8	121.2
Non-Salmon	66.7	22,218	267.7	80.9
Land Mammals	79.5	107,181	1,291.3	390.4
Large Land Mammals	74.4	88,355	1,064.5	321.8
Small Land Mammals	69.2	18,826	226.8	68.6
Birds	69.2	7,826	94.3	28.5
Plants and Berries	82.1	3,475	41.9	12.7

* Estimates based on Commercial Fisheries (Bromaghin and Hammer 1993).

Holy Cross was similar to Anvik in that roughly half (50.8%) of the total pounds harvested were comprised of large mammals. Salmon (19.1 percent) and non-salmon (12.8 percent) comprised almost one-third of the total harvest, small game comprised just over 10 percent, and birds (4.5 percent) and vegetation (2 percent) comprised 6.5 percent of the food harvested in Holy Cross.

Figure 20. Relative Percentage of Total Resources Harvested by Weight, Holy Cross, 1990-1991.



The previous discussion has provided an overview of major resource categories harvested by the residents of Grayling, Anvik, Shageluk, and Holy Cross; and of the relative contributions of each major resource category to the overall harvest. As the Tables and Figures indicate, each community varies in terms of the relative contributions of each major resource category to the overall total harvest. Figure 21 provides an illustration of the relative contribution to each of the major resource categories for the total harvest of the four communities. As is illustrated, salmon accounted for almost 42 percent and large game accounted for almost 33 percent of the total harvest for all four communities. Non-salmon was the third largest category, contributing almost 17 percent to the total amount harvested. Small game (4.1 percent), birds (3.3 percent), and berries and greens (0.9 percent) accounted for less than 10 percent of the total harvest.

Figure 21. Relative Percentage of Resource Categories Harvested by Weight, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.

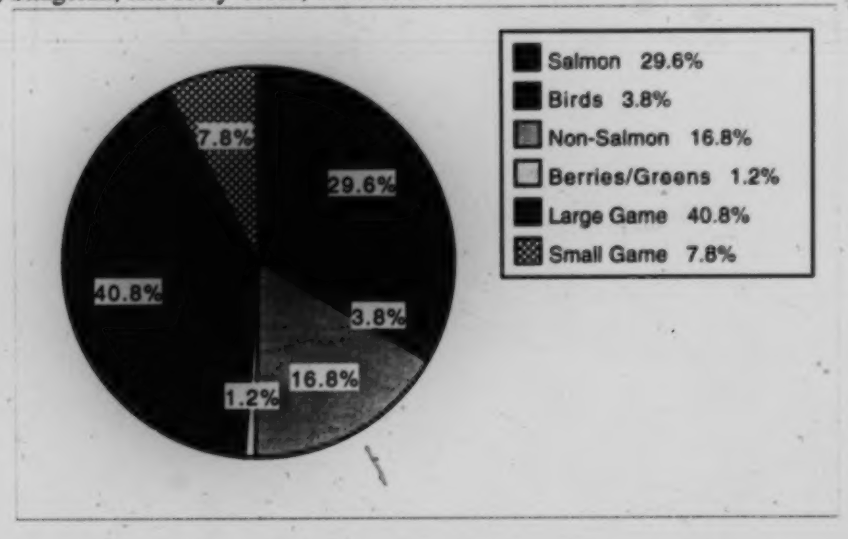
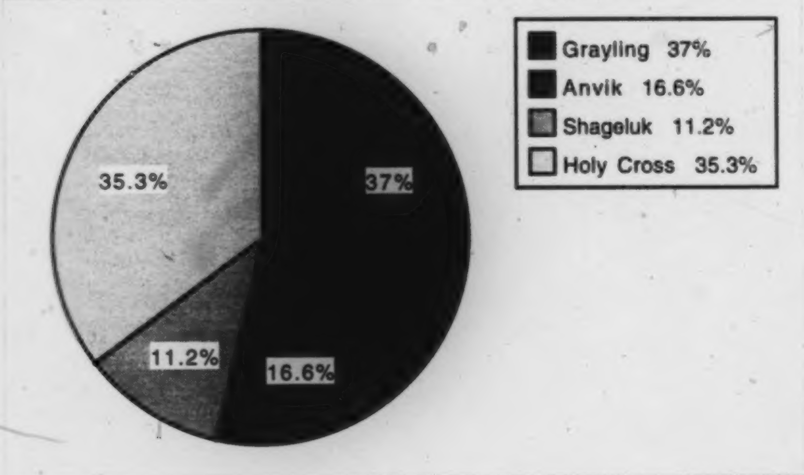


Figure 22 shows the total relative percent of the total harvest (in pounds) by community. As illustrated, Grayling was responsible for the greatest percentage of the harvest, at 37 percent of the total. Holy Cross harvested slightly less than Grayling, about

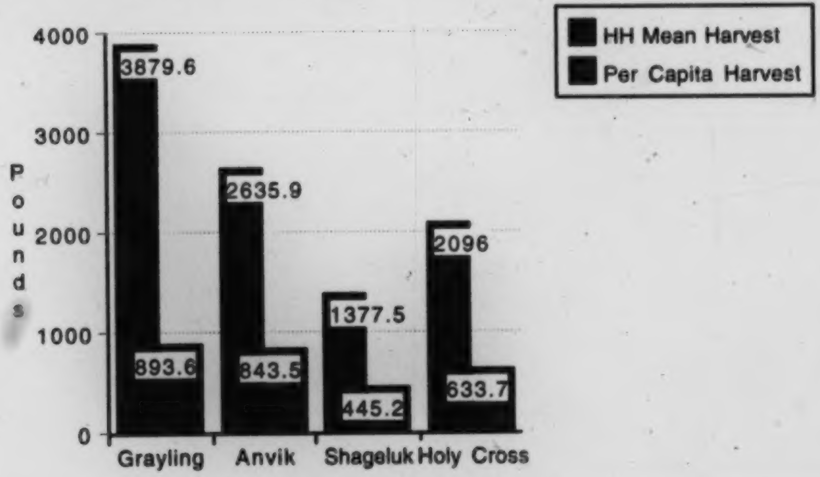
35 percent of the total. Anvik and Shageluk harvested 16.6 and 11.2 percent of the total, respectively.

Figure 22. Relative Percent of Total Harvest by Community, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



Because the four communities range is size from 82 to 207 people, mean household harvest and per capita harvest is a more appropriate means of examining community harvests. As Figure 23 illustrates, of the four communities, Grayling had the highest household mean harvest, at almost 4000 pounds. Anvik had the next highest mean household harvest. At over 2500 pounds, it represented about 65 percent of Grayling's mean household harvest. Holy Cross and Shageluk followed, with mean household harvests of 54 percent and 35 percent of Grayling, respectively.

Figure 23. Comparison of Household Mean Harvest and Per Capita Harvest, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



Interestingly, per capita harvests were more comparable. At just under 900 pounds, Grayling had the highest per capita harvest and Shageluk had the lowest at about 445 pounds. Per capita harvest in Holy Cross was about half that of Grayling; and Anvik had the second highest per capita harvest of about 843 pounds per capita. Clearly there is tremendous variation among and between the four communities in terms of harvest levels. To understand community harvest differences in greater detail, I turn now to a discussion of the species within each of the major resource categories, estimated harvest for each community, and harvest areas for each species used for each community.

Fish

As discussed, fish are divided into two general categories: salmon and non-salmon. Four species of salmon are utilized by residents of Grayling, Anvik, Shageluk, and Holy Cross: Summer chum (dog salmon), Chinook (king salmon), Fall chum (dog salmon), and coho (silver salmon). As opposed to non-salmon species of fish, salmon are harvested for both commercial and subsistence purposes.[96] In contrast to the commercial fishery, which targets summer chum, the majority of salmon harvested for subsistence purposes are king and silver salmon. Non-salmon species of fish commonly utilized by residents of the four communities include pike, sheefish, whitefish, trout, char, and grayling. Of these, whitefish, pike, and sheefish provide the majority of harvest in all four villages. Another species of fish important to the diet, but for which data were not collected, include eulachon.[97] As noted in the previous chapter, while salmon are generally harvested only in the summer and early fall, the non-salmon species can be harvested year-round.

Figure 24 illustrates the combined total subsistence harvest of fish, divided into the two major categories of salmon and non-salmon, for each of the four communities. As is illustrated, salmon accounted for the majority of the subsistence fish harvest in all four communities. It is worth noting that at least 50 percent of the households in all communities participated in subsistence fishing for both salmon and non-salmon. In addition, participation in fishing for non-salmon species was higher in each of the four communities. Grayling had the highest combined subsistence fish harvest total of 107, 182 pounds, of which salmon was about 71 percent. Anvik had the lowest combined subsistence fish harvest of 29, 298 of which salmon was about 57 percent. Salmon comprised 53 percent of the total harvest in Shageluk (37, 038 pounds) and about 60 percent in Holy Cross (55, 487 pounds).

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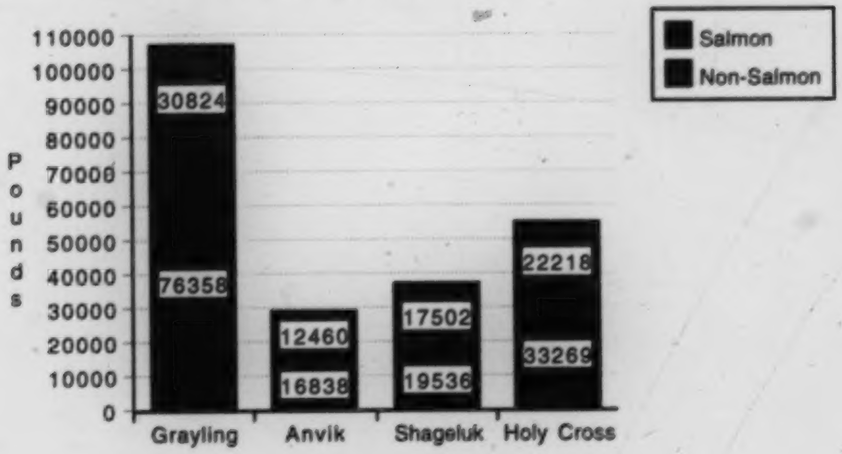
[96] Like trapping, commercial fishing is an important activity, because through it two important resources--cash and protein-- are procured.

[97] Also known as "Hooligan," eulachon is a variety of herring; and is prized for its rich oil content.

Figure 24. Total Edible Pounds of Salmon and Non-Salmon Harvested by Community, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



Tables 31-34 and Figures 25-29 provide information on the subsistence fish harvests in each of the four communities. Fish harvests ranged from a high of 525.3 pounds in Grayling, to a low of 202.1 pounds in Holy Cross. Salmon ranged from comprising 71.2 percent of the total edible pounds of fish harvested in Grayling, to a low of 52.8 of the total edible pounds of fish harvested in Shageluk.

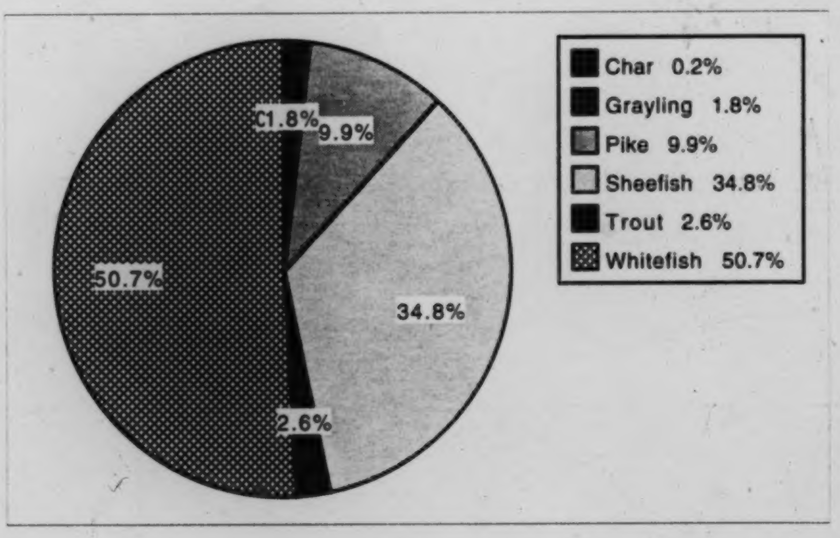
In Grayling, overall household participation in fishing was high; it ranged from a low of seven percent of the households participating in char fishing, to a high of 100 percent of the households fishing for salmon. The per capita harvest of all fish species was 525.3 pounds, over two-thirds of which was salmon. Non-salmon species accounted for 28.8 percent of the total fish pounds harvested in Grayling.

Table 31. Fish Harvested by the Residents of Grayling, 1990-1991 (Source: Field Data).

Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Fish	100.0	107,182	2,280.5	525.3
Salmon	100.0	76,358	1,624.6	374.2
Non-Salmon Fish	100.0	30,824	655.8	151.1
Char	7.3	58	1.2	.3
Grayling	61.0	560	11.9	2.7
Pike	61.0	3,047	64.8	14.9
Sheefish	90.2	10,730	228.3	52.6
Trout	46.3	791	16.8	3.9
Whitefish	82.9	15,637	332.7	76.6

Of the non-salmon species harvested in Grayling, whitefish (50.7 percent), sheefish (34.8 percent), and pike (9.9 percent) together comprised about 95 percent of the harvest. The remaining four percent of the total harvest in Grayling was comprised of char (.2 percent), grayling (1.8 percent), and trout (2.6 percent).

Figure 25. Relative Percentage of Non-Salmon Harvested by Weight, Grayling, 1990-1991.



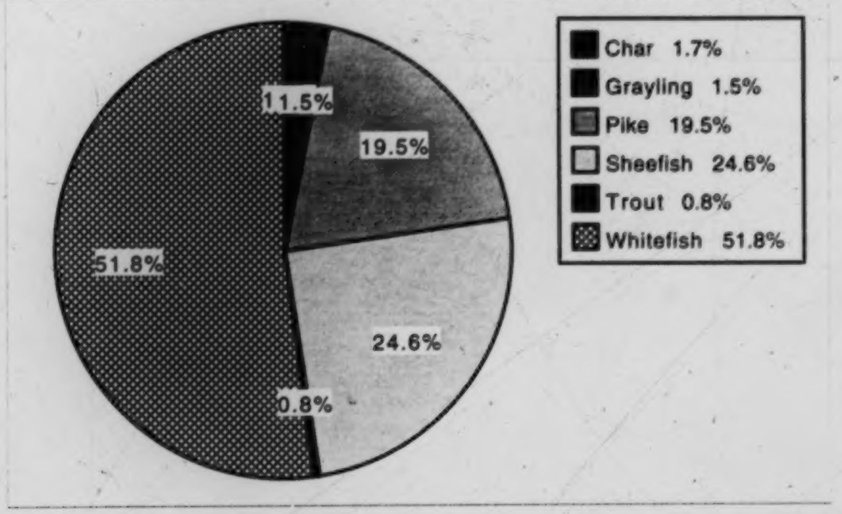
The per capita pounds of fish harvested was considerably less in Anvik than in Grayling (302 as compared to 525 pounds). As in Grayling, the majority of the fish (57.5 percent) harvest in Anvik was attributable to salmon. Participation in fishing was lower in Anvik than in Grayling, ranging from eight percent of the households fishing for char, to 83 percent of the households fishing for salmon.

Table 32. Fish Harvested by the Residents of Anvik, 1990-1991 (Source: Field Data).

Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Fish	87.5	29,298	945.1	302.4
Salmon	83.3	16,838	543.2	173.8
Non-Salmon Fish	79.2	12,460	401.9	128.6
Char	8.3	211	6.8	2.2
Grayling	33.3	190	6.1	2.0
Pike	41.7	2,434	78.5	25.1
Sheefish	62.5	3,071	99.1	31.7
Trout	12.5	95	3.1	1.0
Whitefish	62.5	6,460	208.4	66.7

Non-salmon species of fish accounted for approximately 42.5 percent of the total fish harvest in Anvik. As was the case in Grayling, the majority of non-salmon fish harvested included whitefish (51.8 percent), sheefish (24.6 percent), and pike (19.5 percent). The remaining three percent of the total non-salmon harvest in Anvik was comprised of char (1.7 percent), grayling (1.5 percent) and trout (0.8 percent).

Figure 26. Relative Percentage of Non-Salmon Harvested by Weight, Anvik, 1990-1991.



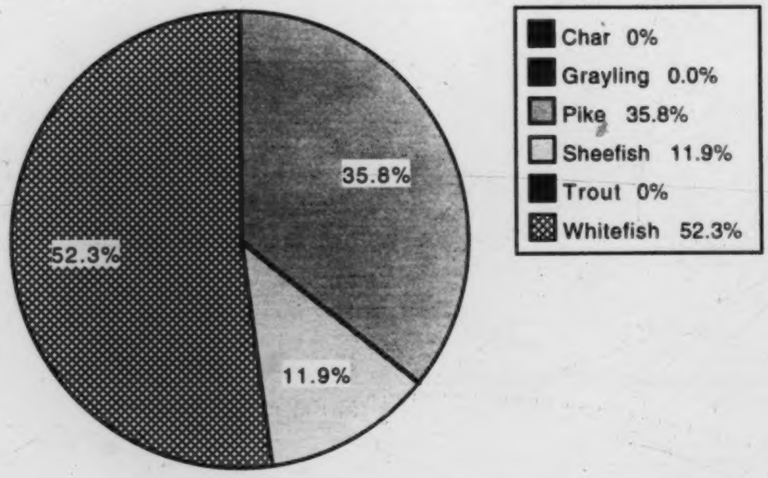
In Shageluk, non-salmon comprised slightly less than half of the total fish harvest. Per capita harvest of all fish was 299 pounds, comparable to that in Anvik and considerably less than that of Grayling. Participation was relatively low-- ranging from no households fishing for char and trout to 50 percent of the households fishing for salmon.

Table 33. Fish Harvested by the Residents of Shageluk, 1990-1991 (Source: Field Data).

Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Fish	56.3	37,038	926.0	299.3
Salmon	50.0	19,536	488.4	157.9
Non-Salmon Fish	56.3	17,502	437.6	141.4
Char	0.0	0	0.0	0.0
Grayling	3.1	1	.02	.01
Pike	46.9	6,263	156.6	50.6
Sheefish	31.3	2,081	52.0	16.8
Trout	0.0	0	0.0	0.0
Whitefish	46.9	9,158	228.9	74.0

As in Grayling and Anvik, whitefish comprised about half (52.3 percent) of the non-salmon fish harvested in Shageluk. In contrast, however, pike comprised the second largest non-salmon pounds harvested (35.8 percent) and sheefish comprised the third (11.9 percent). Also, char and trout were reportedly not harvested during the 1990-1991 study year.

Figure 27. Relative Percentage of Non-Salmon Harvested by Weight, Shageluk, 1990-1991.



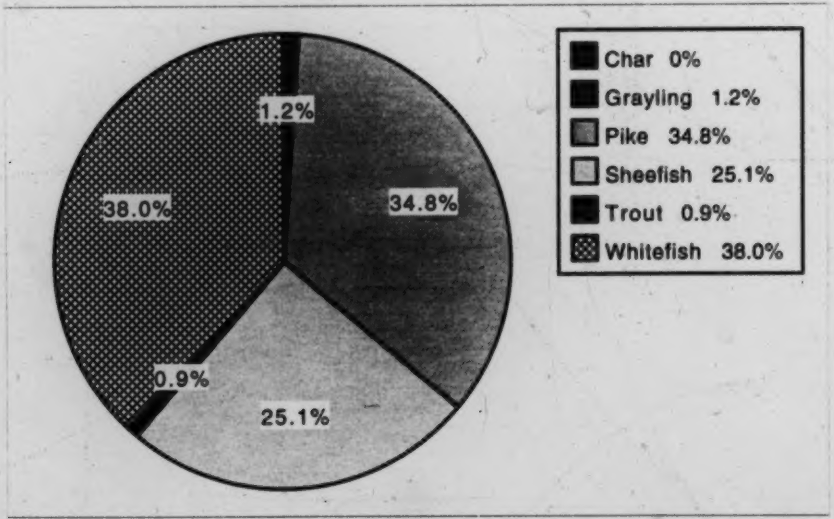
Holy Cross had the lowest pounds per capita of fish harvest (202 pounds). Interestingly, participation in fishing by Holy Cross households was higher than in Shageluk, but lower than in Grayling, ranging from a low of no households participating in char fishing to 64 percent participating in salmon fishing. Non-salmon comprised 40 percent of the total fish harvest.

Table 34. Fish Harvested by the Residents of Holy Cross, 1990-1991 (Source: Field Data).

Resource			Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Fish			71.8	55,487	668.5	202.1
	Salmon		64.1	33,269	400.8	121.2
	Non-Salmon Fish		66.7	22,218	267.7	80.9
		Char	0.0	0	0.0	0.0
		Grayling	12.8	268	3.23	1.0
		Pike	43.6	7,725	93.1	28.1
		Sheefish	41.0	5,587	67.3	20.4
		Trout	2.6	192	2.3	.7
		Whitefish	61.5	8,447	101.8	30.8

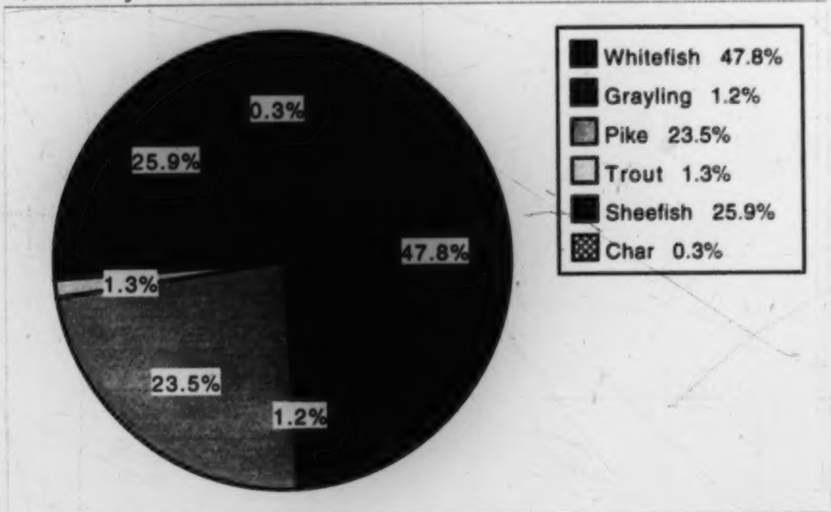
Whitefish and pike accounted for comparable percentages of the non-salmon pounds harvested (38 percent and 35 percent, respectively), and sheefish accounted for about 25 percent of the total non-salmon harvest in Holy Cross. No char were harvested during 1990-1991, and grayling and trout provided only a minor contribution to the overall pounds harvested.

Figure 28. Relative Percentage of Non-Salmon Harvested by Weight, Holy Cross, 1990-1991.



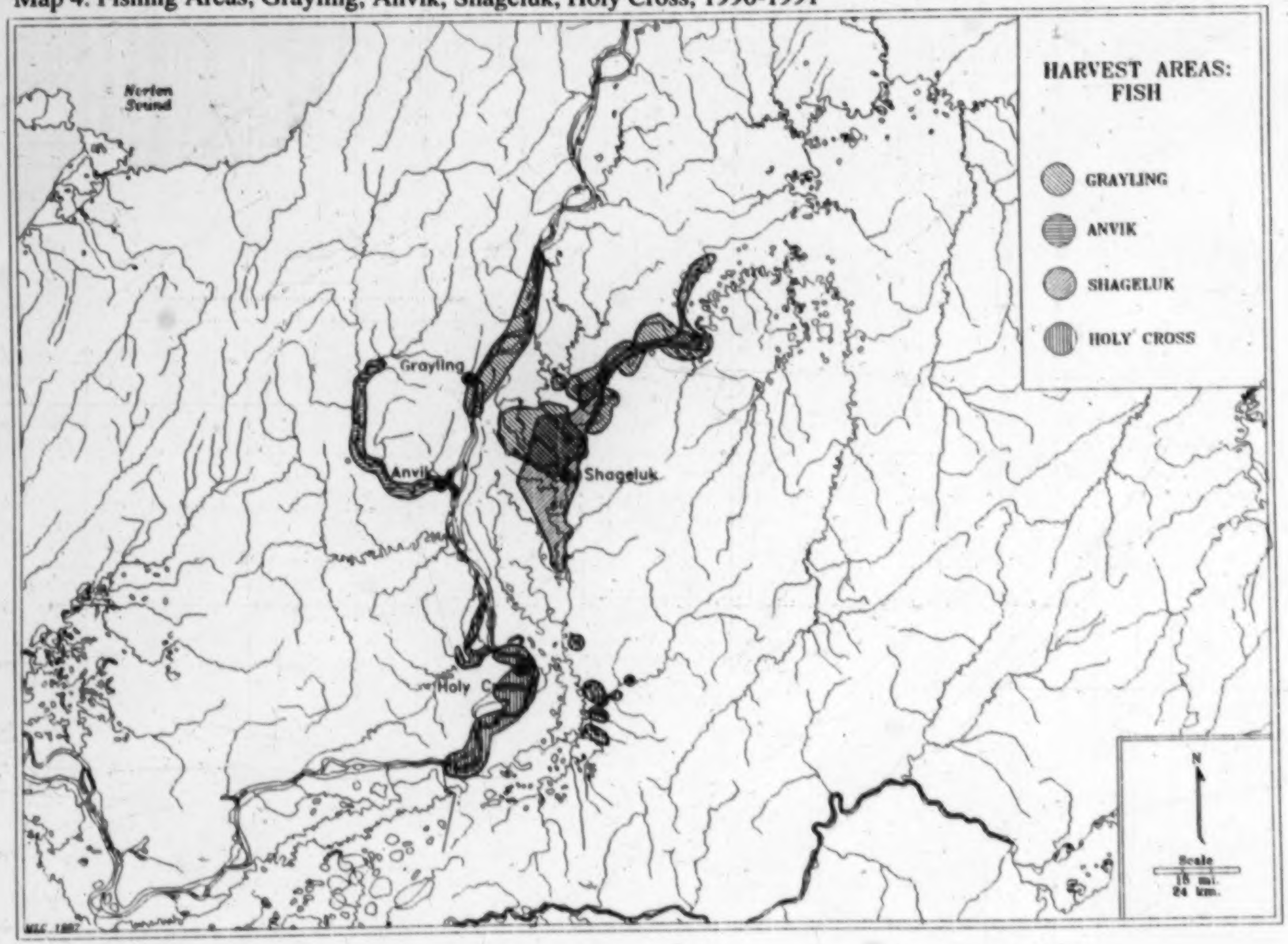
For all four communities, non-salmon represented 36 percent of the total fish harvest (Figure 29). Of that, whitefish comprised almost half (47.8 percent) of the total harvest. Pike and sheefish comprised relatively comparable percentages of the total harvest (23.5 percent and 25.9 percent, respectively), and char (0.3 percent), grayling (1.2 percent), and trout (1.3 percent), together contribute only a small fraction (2.8 percent) of the total non-salmon harvest.

Figure 29. Relative Percentage of Non-Salmon harvested by Weight, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



Map 4 shows the subsistence fishing areas used by residents of all four villages. For the residents of Grayling, subsistence fishing occurs in several different areas, depending on the species. Salmon fishing occurs on the Yukon River, from roughly ten miles below Grayling up to Alice Island. Pike fishing occurs in the lakes and sloughs southeast of Grayling. Pike and whitefish are also taken on the Innoko River from ten miles below Holikachuk up to Dementi. Anvik fishermen primarily utilize the Anvik river for subsistence fishing, although numerous lakes and sloughs are also used. Shageluk residents fish primarily along the Innoko River from fifteen miles below Shageluk to roughly twenty miles above Dementi. Residents of Holy Cross generally fish for salmon

Map 4. Fishing Areas, Grayling, Anvik, Shageluk, Holy Cross, 1990-1991


Norton Sound
Grayling
Anvik
Shageluk
Holy C
HARVEST AREAS: FISH
GRAYLING
ANVIK
SHAGELUK
HOLY CROSS
N
Scale
15 mi.
24 km.

and whitefish along the Yukon River from ten to fifteen miles above and below Holy Cross. Additionally, blackfish are sought in lakes and sloughs just below Holy Cross. Whitefish, sheefish and pike fishing occurs in the Paimiut Slough; and in Reindeer Lake, Pete's Lake, and Steven's Lake, and along Deer Hunting Slough (see also Map 1 for placenames).

Subsistence harvest of salmon is accomplished with set nets and drift nets, and occurs primarily in the Yukon River. Shageluk residents typically move to points along the Yukon for their salmon. Non-salmon species, especially whitefish, sheefish, and pike, are harvested with dip nets and set nets, typically in the Innoko and Anvik Rivers. Trout and grayling are occasionally caught with rod and reel.

Land Mammals

Large land mammals harvested by residents of Grayling, Anvik, and Holy Cross include moose, caribou, and black and brown bear. Shageluk residents hunted only moose. While inquiries regarding dall sheep and goat were made, neither were reportedly harvested by anyone from any of the four villages during the study period. Caribou are hunted when possible, although given the great distances people must travel to hunt caribou, they are not currently readily accessible to local hunters.[98] Nonetheless, people are generally interested in hunting caribou, particularly in light of the increasing competition between resident and non-local hunters over local moose resources. According to local people, however, the caribou may be moving closer to the area. In 1990-1991, caribou were available in the vicinity of Dikeman and Iditarod; and a few hunters from Grayling, Anvik, and Holy Cross made that trip in 1990-1991. The few caribou harvested as a result were obtained with extensive travel and considerable expense.[99]

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[98] As noted previously, great long term fluctuations occur with caribou; and the resource may have (and may once again) provide a staple protein source to the overall diet.

[99] It is also important to note that there is considerable prestige associated with harvesting a scarce resource, and this may drive the desire to harvest. Similarly, desire to harvest (and willingness to travel

Tables 35-38 provide an overview of the percent of households participating in hunting large mammals, edible pounds harvested, and per capita pounds harvested of land mammals by residents of Grayling, Anvik, Shageluk, and Holy Cross.

In Grayling, 78 percent of the households hunted moose; and moose provided almost 99 percent of the total pounds harvested. A small percent of the households hunted black (12.2 percent) and brown (2.4 percent) bear, and bears provided only a small percentage of the overall large mammal harvest. Similarly, few households hunted caribou; and caribou represented only a small fraction of the harvest. Almost 300 pounds per capita of large mammals was harvested by residents of Grayling.

Table 35. Land Mammals Harvested by Grayling, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Large Land Mammals	78.0	59,856	1,273.5	293.3
Black Bear	12.2	532	11.3	2.6
Brown Bear	2.4	162	3.4	0.8
Caribou	2.4	149	3.2	0.7
Moose	78	59,014	1,255.6	289.2

The situation is basically similar in Anvik, although a higher percent of households in Anvik hunted bear, particularly black bear. As in Grayling, roughly three fourths of the households (75 percent) hunted moose, and moose provided about 95 percent of the total harvest of large mammals. While only 8.3 percent of the households in Anvik hunted caribou, this percentage reflects the highest participation of any of the four villages. Caribou provided about three percent of the large mammal harvest. Almost 400 pounds per capita of large mammals were harvested by the residents of Anvik.

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long distances to attain the resource) may also be tied to the desire to assert "rights" to the resource for the purposes of federal or state game management regulations.

Table 36. Land Mammals Harvested by Anvik, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Large Land Mammals	75.0	37,252	1,201.7	384.5
Black Bear	20.8	450	14.5	4.64
Brown Bear	4.2	364	11.8	3.8
Caribou	8.3	1,175	37.9	12.1
Moose	75.0	35,263	1,137.5	364.0

Moose were the only large land mammal hunted in Shageluk, and less than half of the households hunted moose. Per capita harvest of moose was about 126 pounds, considerably less than the three other villages. In comparison, the moose harvest in Shageluk was 18 percent of that in Holy Cross, 26 percent of that in Grayling, and 44 percent of that in Anvik.

Table 37. Land Mammals Harvested by Shageluk, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Large Land Mammals	37.5	15,600	390.0	126.1
Black Bear	0.0	0	0.0	0.0
Brown Bear	0.0	0	0.0	0.0
Caribou	0.0	0	0.0	0.0
Moose	37.5	15,600	390.0	126.1

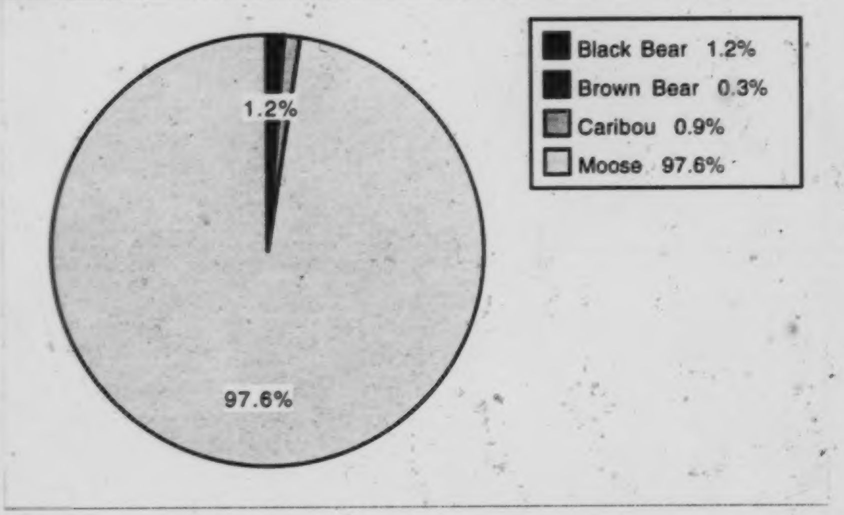
Holy Cross exhibited similar patterns to those of Grayling and Anvik. About three fourths (74.4 percent) of the households hunted moose, and moose constituted the majority (98 percent) of large mammals harvested. In comparison to Anvik, a slightly higher percentage of households in Holy Cross hunted black bear (23.1 percent), although black bear contributed less than two percent of the overall large mammal harvested.

Table 38. Land Mammals Harvested by Holy Cross, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Large Land Mammals	74.4	88,355	1,064.5	321.8
Black Bear	23.1	1,481	17.8	5.4
Brown Bear	0.0	0	0.0	0.0
Caribou	2.6	553	6.7	2.0
Moose	74.4	86,320	1,040.0	314.4

In summary, in three of the four communities, roughly three fourths of the households hunted moose; and moose provided the primary source of large mammals harvested. Moose is the largest contributor to the overall large game harvest by residents of all four villages-- accounting for 97.6 percent of the total.

Figure 30. Relative Percentage of Large Game Harvested by Weight, Grayling, Anvik, Shageluk, Holy Cross, 1990-1991.



Moose is clearly a staple resource, providing from 95 to 100 percent of the large mammal harvest; and from 28 (Shageluk) to 51 (Holy Cross) percent of the total edible pounds harvested. While there is interest in obtaining caribou, few people actively hunted caribou (for reasons already discussed); and caribou provided less than one percent of the total large mammal harvest during the 1990-1991 season. There is limited interest and participation in black bear hunting in at least three of the communities, and during 1990-1991 black bear provided a small percentage (1.2 percent) of the total large mammals hunted. There is reportedly less interest in brown bear hunting, and only a small fraction of households participated in brown bear hunting.[100] Not surprisingly, brown bear accounted for less than one percent (.3) of the total large mammals harvested. Large mammals provided from 126 to 384.5 pounds per capita to the residents of Grayling, Anvik, Shageluk, and Holy Cross during 1990-1991.

The four villages are located in Federal Game Management Unit (GMU) 21, subunit 21E, and adjacent to subunits 21A, 21D, and Federal GMUs 18 and 22. According to local people, the majority of large game hunting occurs within GMU 21; specifically, subunits 21E, 21A, and 21D.[101] Map 5 provides the resource use areas of each of the four communities, imposed over the GMU Map. The observation that people conduct most of their resource use in GMU 21 is well supported.

Most of the moose harvested in 1990-1991 by residents of the four communities were harvested during the regulated moose hunting season, which occurred from September 5 through 25 in 1991 in GMU 21E. Interestingly, local hunters and non-local hunters had the same season in 1991. While some hunters traveled to other GMUs, distance, time limitations, and limited resources reduced options for local people, who generally hunted moose within 100 miles of home. The winter moose hunting season (a resident-only hunt) was open February 1-10, 1991. The winter hunt is not generally as productive as the fall hunt, yielding about one third the fall time harvest. Nonetheless, the winter moose hunt provides an important opportunity for local residents to acquire moose at a time when other resources are not plentiful.

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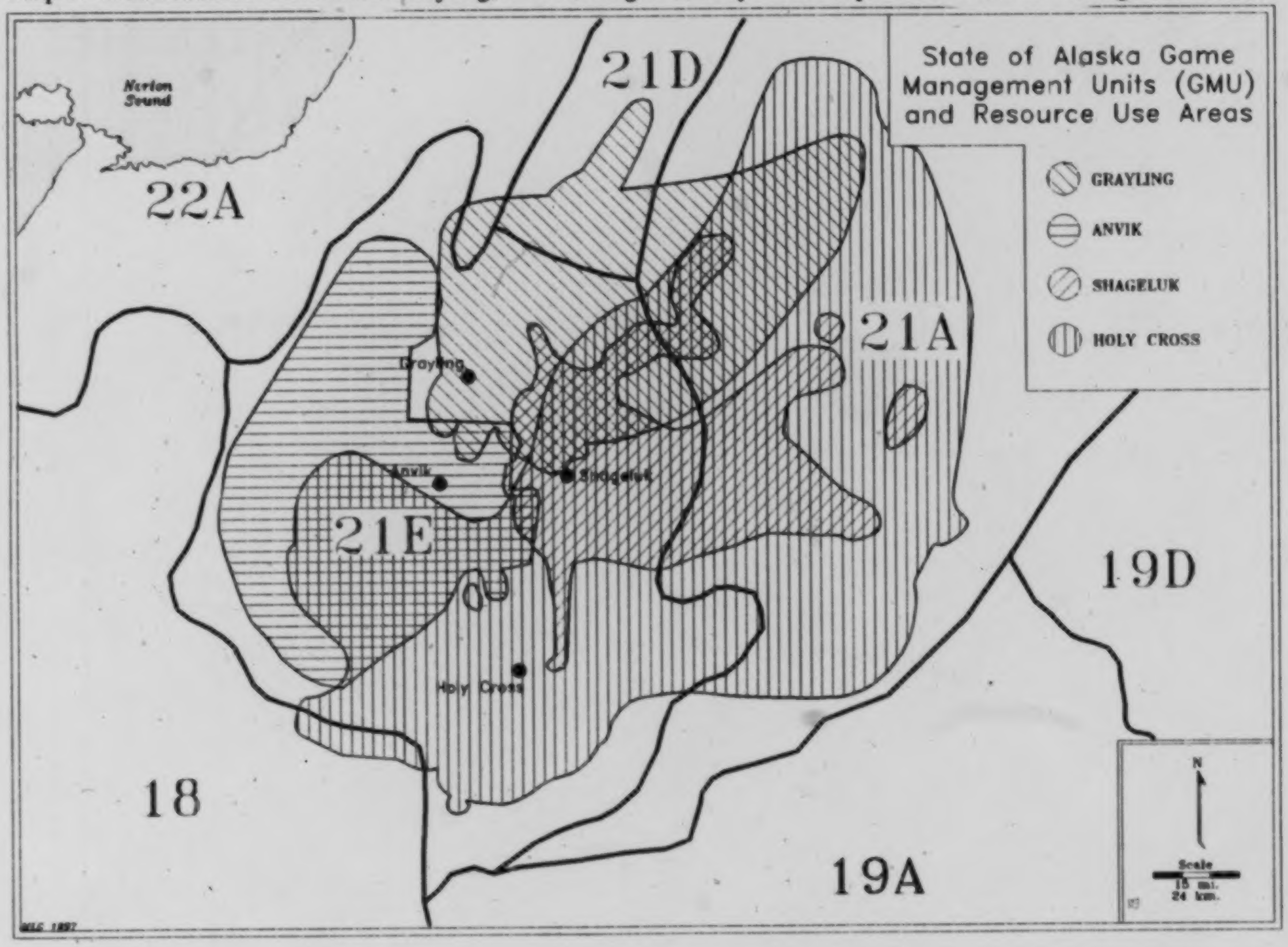
[100] Interest expressed in, and subsequent data collection on, bear hunting may reflect cultural reluctance to discuss bear, and hence data may not reflect actual harvest.

[101] Though not the focus of this study, further research regarding boundaries-- i.e. ,private/public, state/federal/Native lands, might be enlightening.

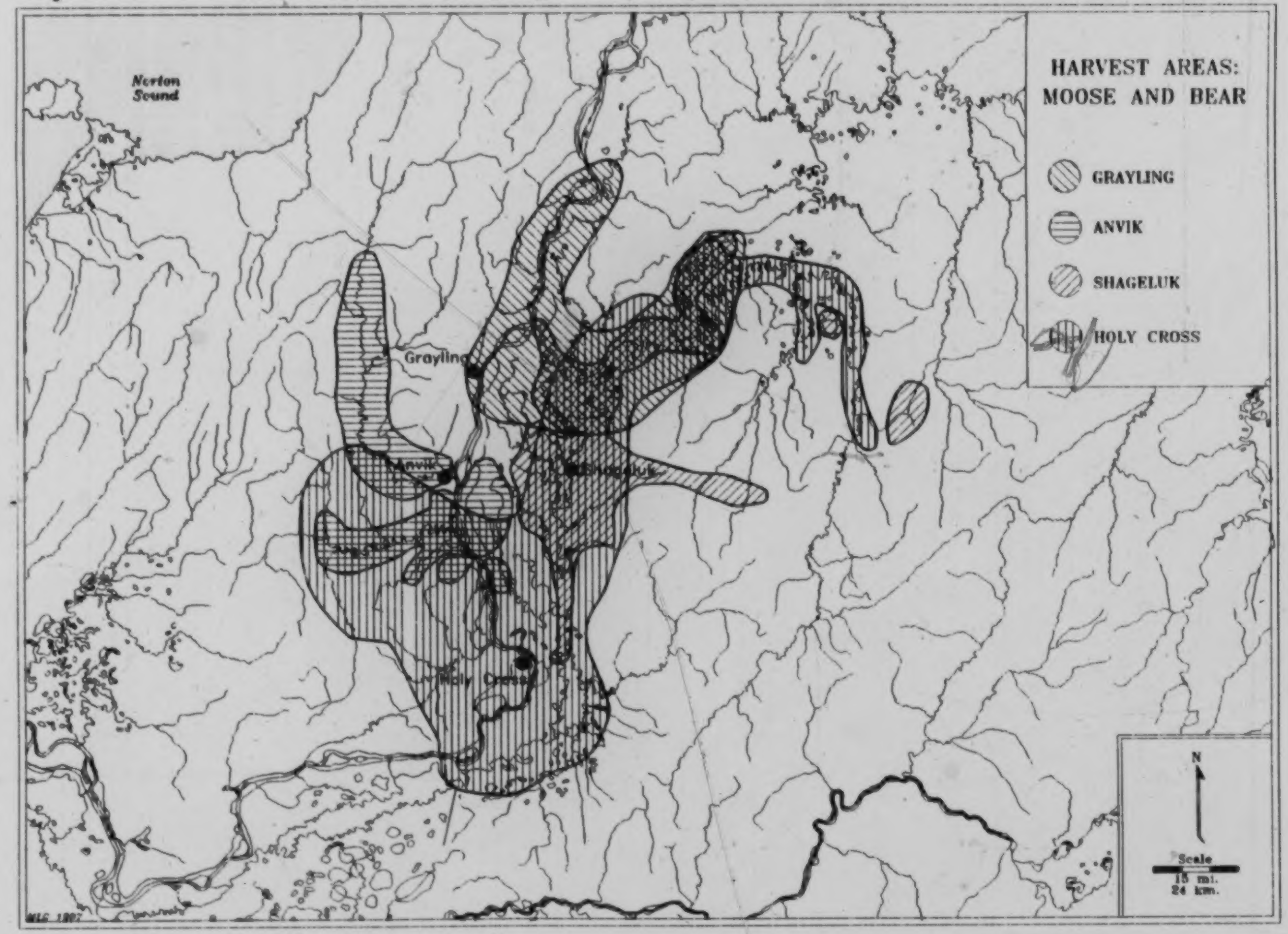
Map 5. Wild Resource Use Area of Grayling, Anvik, Shageluk, Holy Cross Imposed Over Game Management Units.


Norton Sound
22A
21D
21A
21E
19D
19A
18
Grayling
Anvik
Shageluk
Holy Cross
State of Alaska Game Management Units (GMU) and Resource Use Areas
GRAYLING
ANVIK
SHAGELUK
HOLY CROSS
N
Scale
15 mi.
24 km.
MLC 1997

Map 6 shows the moose and bear harvesting areas as described by residents of each of the four communities. For the residents of Grayling, fall moose hunting generally occurs within ten miles of the Yukon River, from five miles south of Grayling up until Blackburn Island, and along the Innoko River up until approximately twenty five miles past Dementi. Anvik residents utilize the Anvik River up to Canyon Creek, the Bonasila river through to include the Stuyahok River, and the Yukon River from Turtle Island up to roughly five miles above Anvik. Shageluk residents hunted for moose primarily along the Innoko River, from Railroad City up to twenty miles past Dementi. In addition, parts of Shageluk Slough, the Yetna River and the Itidarod River were also used for moose hunting by Shageluk hunters. Holy Cross residents typically hunt moose along the Yukon River from Paimiut, west to include the Bonasila and Stuyahok Rivers, up to roughly ten miles below Anvik, and east to include the Innoko National Wildlife Refuge and the Innoko River up to Six Mile Lake. Similarly, Holy Cross hunters also hunt along the Yetna River and the Innoko River, traveling upstream to the mouth of the Itidarod River. Winter moose hunting takes place in the same general areas, though typically people tend to stay closer to home. During 1990-1991, several trappers harvested moose while operating their traplines.

Some hunters indicate that brown and black bear are sometimes hunted in conjunction with fall moose hunting. This is consistent with bear harvest use areas documented by residents. Contrary reports indicate that the bear are not good to eat at this time of year as a result of their summer-long diet of fish. Others report that spring time bears are "better," though noticeably leaner and without the fat of summer and fall time bear. Reports during this research indicate that the majority of bears taken by the residents of the four villages were harvested in spring and summer.

Map 6. Moose and Bear Hunting Areas, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.


Norton Sound
HARVEST AREAS:
MOOSE AND BEAR
GRAYLING
ANVIK
SHAGELUK
HOLY CROSS
Grayling
Anvik
Shageluk
Holy Cross
N
Scale
15 mi.
24 km.
MLC 1997

Fur Bearers and Small Game

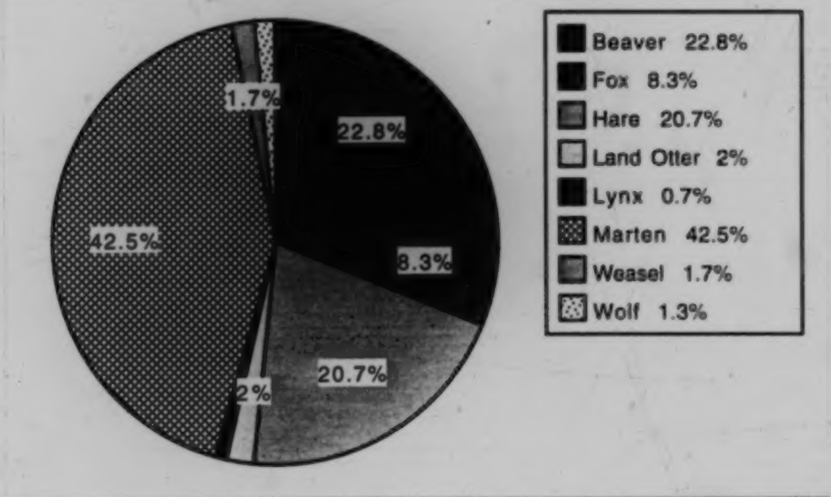
Small land mammals targeted by trappers from Grayling, Anvik, Shageluk, and Holy Cross include wolf, otter, beaver, marten, muskrat, fox, and lynx. Beaver, hare, and muskrat were also commonly snared. While trapping was the most common means of taking fur bearers, snaring was also a means of harvesting fur bearers and small mammals. While fur bearers are generally taken primarily for their fur, certain species, for example, beaver and hare, are also harvested for their meat. Estimated levels of household participation and harvest of fur bearers taken during the study period by trappers from Grayling, Anvik, Shageluk, and Holy Cross are shown in Table 39. Likewise, Figure 31 illustrates the relative percentage of the total small game harvest by weight.

Table 39. Fur Bearer Resources Harvested by Residents of Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

	Estimated Percent of Households Harvesting and Number Harvested			
	Grayling	Anvik	Shageluk	Holy Cross
Resource	%/#	%/#	%/#	%/#
Beaver	31.7 / 242	50 / 353	12.5 / 31	51.4 / 577
Fox	17.1 / 25	12.5 / 198	15.6 / 10	28.2 /204
Hare	22.0 /144	33.3 / 145	6.3 / 40	43.6 /762
Land Otter	9.8 / 11	8.3 / 16	3.1 / 3	20.5 / 74
Lynx	0.0/0	4.2 / 5	0.0 / 0	15.4 /30
Marten	39.0 / 304	20.8 / 159	21.9 / 98	43.6 /1,683
Weasel	4.9 / 8	8.3 / 14	0.0 / 0	10.3 /70
Wolf	9.8 / 15	4.2 / 26	0.0 / 0	12.8 /28

Marten and beaver are the most commonly harvested of the fur bearers; together they comprise approximately 65 percent of the total small game harvest. In Anvik and Holy Cross, beaver were the most commonly harvested; and in Grayling and Shageluk, marten was most frequently harvested. Hare comprise roughly 21 percent of the total small game harvested; and fox, land otter, lynx, weasel, and wolf together comprise the remaining 14 percent of the total small game harvest.

Figure 31. Relative Percentage of Small Game Harvested by Weight, Grayling, Anvik, Shageluk, Holy Cross, 1990-1991.



Participation levels in trapping were lower than for any other activity, although from one third to one half of all households in the four communities trapped during 1990-1991. While low fur prices may be partly responsible for lowered interest in trapping, not all who trap do it solely for economic gain. The importance of trapping (and by association hunting, fishing, and gathering) as a means of affirming cultural identity and ties to the land cannot be underestimated. [102] Many trappers referred to the "mental health" benefits of trapping as being the primary incentive for participation, since trapping provides a way for people to get out on the land. One young man indicated that while he made little money after selling his furs by the time he paid for his gas, he liked running a trap line because "it got him out on the land." The non-economic aspects of trapping are clearly as

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[102] Usher (1976b: 16) provides a similar description of the advantages of hunting for the Inuit of the Northwest Territories:

> Hunting as an expression of cultural identity is of profound importance to the Eskimo and it is sometimes engaged in even when it is clearly uneconomic. This remains true for the younger generation as well. The large proportions of total cash income spent by almost all men on hunting, trapping and traveling gear, even if these tools do not provide their chief source of income, are indicative of their commitment to a land oriented way of life. Further, country food, and the ethics and values associated with obtaining, sharing and eating it, are of profound significance to Native people....

(and some would argue more) important as the economic, though the latter often attract the most attention in analyses of subsistence economies.

As noted previously, trapping areas typically operate on the principle of 'usufructory rights'-- that is, as long as they are used, other trappers respect that use and stay away. As mentioned earlier, trapline areas are typically handed down through generations from father to son (Vanstone 1979a: 183). Commonly, more than one area is recognized as belonging to a given trapper, who alternates use of the areas to provide for continued viability of the furbearing populations (cf. Feit 1986).

The trapping use areas were documented by village residents during 1990-1991 (Map 7).[103] In general, trappers from Grayling trap in the area from Blackburn Hills to Blackburn Island and the Innoko River and Innoko National Wildlife Refuge almost to Dishkaket. The trapping area utilized by Anvik trappers includes some of the Innoko National Wildlife Refuge; and west over to Athuelinguk River, from roughly ten miles north of Stuyahok, and the Stuyahok River, and all of the Anvik River up to Canyon Creek. The area utilized by trappers from Shageluk includes the Innoko River from fifteen miles blow Shageluk, over to Itidarod, up into the Innoko National Wildlife Refuge almost to Dikeman and back over to the Innoko River almost to Holikachuk. The area generally covered by trappers from Holy Cross includes most of the same area used for moose hunting, as well as much of the Innoko National Wildlife Refuge and the Itidarod River. Snaring generally occurs in close proximity to the village, or incidental to other activities.

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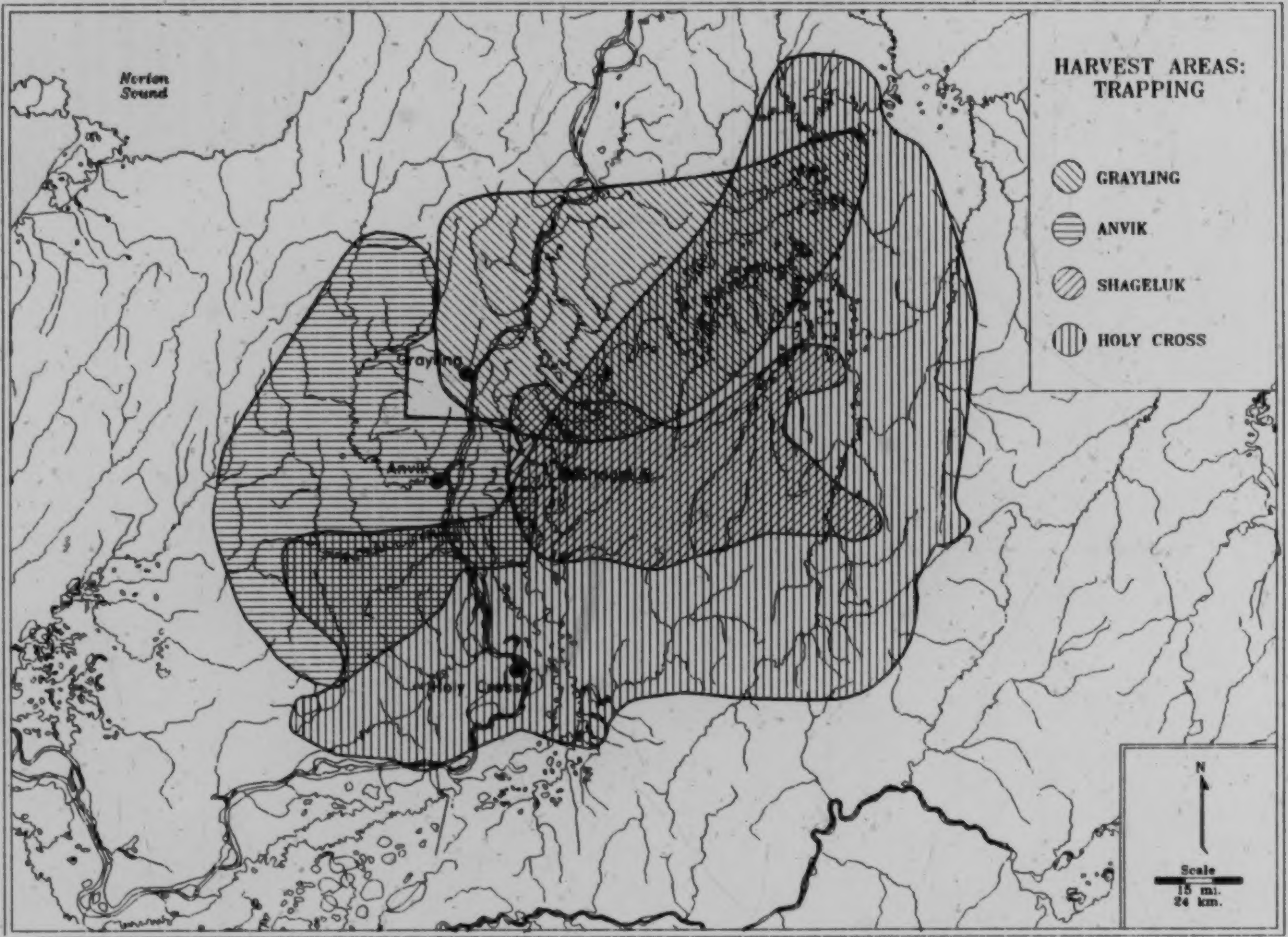
[103] Due to the nature of the activity, its season (winter), and traditional mechanisms which regulate trapline use, trapping covers the largest land area.

Map 7.Trapping Areas, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.


Norton Sound
HARVEST AREAS: TRAPPING
GRAYLING
ANVIK
SHAGELUK
HOLY CROSS
Grayling
Anvik
Shageluk
Holy Cross
N
Scale
15 mi.
24 km.

Birds

For the purposes of this study, birds were subdivided into three categories: ducks, geese, and other birds. Species of ducks commonly harvested by residents of the four communities include mallard, pintail, green winged teal, American widgeon, northern shoveler, ring necked, canvas backed, and bufflehead. Species of geese commonly harvested include Canada geese and white-fronted geese. Though not legal, swans and cranes are also infrequently harvested. Other game birds harvested most commonly include ptarmigan, spruce hen and grouse. Species of birds harvested are listed in Appendix D. Tables 40-43 provide data on household participation in and harvest of birds for the four communities.

The majority of households in Grayling (85.4 percent) harvested birds and almost 30 pounds per capita of birds were harvested. Of that, just over half (52.3 percent) was comprised of geese; 18.3 was comprised of ducks; and 27.3 percent was comprised of ptarmigan, spruce hens, grouse, and other birds. Swans contributed a fraction of the overall harvest.

Table 40. Birds Harvested by the Residents of Grayling, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Birds	85.4	6,035	128.4	29.6
Migratory Birds	70.7	4,385	93.3	21.5
Ducks	70.7	1,102	23.4	5.4
Geese	68.3	3,157	67.2	15.5
Swan	4.9	126	2.7	.6
Other Birds	80.5	1,650	35.1	8.1

The proportion of households hunting birds in Anvik (85 percent) was comparable to Grayling. Nonetheless, per capita harvest of birds on Anvik was about 25 percent greater than in Grayling; almost 40 pounds per capita were harvested compared with just under 30 pounds in Grayling. Geese provided the majority (64 percent) of the bird harvest; the remaining 36 percent was divided almost equally between ducks and other birds (i.e., ptarmigan, spruce hens, grouse, etc.). Swans were reportedly not harvested by residents of Anvik in 1990-1991.

Table 41. Birds Harvested by the Residents of Anvik, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Birds	83.3	3,966	127.9	40.9
Migratory Birds	79.2	3,253	104.9	33.6
Ducks	75.0	703	22.7	7.3
Geese	70.8	2,550	82.3	26.3
Swan	0.0	0.0	0.0	0.0
Other birds	83.3	712	23.0	7.4

Less than half of the households in Shageluk harvested birds, and birds provided only 9.1 pounds per capita in Shageluk. As with Grayling and Anvik, geese comprised the majority of the bird harvest (roughly 70 percent). Ducks provided approximately 24 percent of the bird harvest; and ptarmigan, spruce hens, grouse, and other birds provided about 9 percent of the total harvest of birds. As in Anvik, swans were reportedly not harvested by residents of Shageluk during the study year.

Table 42. Birds Harvested by the Residents of Shageluk, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Birds	43.8	1,123	28.1	9.1
Migratory Birds	40.6	1,022	25.6	8.3
Ducks	34.4	242	6.1	2.0
Geese	28.1	780	19.5	6.3
Swan	0.0	0.0	0.0	0.0
Other Birds	18.8	101	2.5	.8

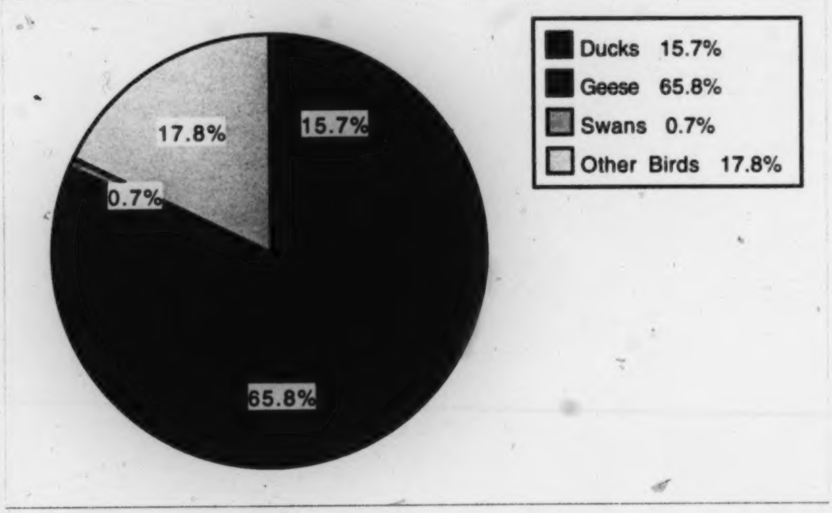
About 69 percent of the households in Holy Cross harvested birds, a lower proportion than both Grayling and Anvik, though not as low as Shageluk. Residents of Holy Cross harvested an estimated 28.5 pounds per capita of birds. Of that harvest, roughly three-fourths was comprised of geese, ducks, and ptarmigan, spruce hens, grouse, and other birds. Each of these categories comprised about 12 percent, and swans comprised only a small fraction of the harvest.

Table 43. Birds Harvested by the Residents of Holy Cross, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Birds	69.2	7,826	94.3	28.5
Migratory Birds	61.5	6,923	83.4	25.2
Ducks	51.3	936	11.3	3.4
Geese	53.8	5,976	72.0	21.8
Swan	2.6	11	.1	.04
Other Birds	56.4	903	10.9	3.3

In summary, birds provided a relatively small, but nonetheless important component of the overall harvest in all four communities. The majority of households in three of the four communities participated in harvesting birds. Per capita harvest of birds ranged from a high of 40.9 pounds in Anvik, to a low of 9.1 pounds in Shageluk. Of the total bird harvest of the four communities, 81.5 percent was ducks and geese, although the geese harvest contributed more than four times the total pounds harvested of ducks (65.8 versus 15.7 percent). Ptarmigan, grouse, spruce hens and other birds contributed 17.1 percent of the total harvest; and swans contributed only a fraction (.7 percent) of the total bird harvest in the four communities.

Figure 32. Relative Percentage of Birds Harvested by Weight, Grayling, Anvik, Shageluk, Holy Cross, 1990-1991.



Some ducks and geese are obtained during the fall hunt, as allowed by current regulations. In the fall, hunting effort is generally directed towards ducks and geese in conjunction with moose hunting.[104] However, fall time is not the preferred hunting season for waterfowl. As discussed, migratory waterfowl were traditionally hunted in the spring, upon their arrival. Spring time continues to be the locally preferred time to harvest migratory waterfowl, and the data support an active spring time harvest of ducks and geese by residents of the four villages.

Map 8 provides the duck hunting areas utilized by residents of each of the four communities. Grayling residents generally hunt duck and geese in the same area as they hunt moose, in addition to an area along the Yukon River about half way to Anvik. Anvik residents hunt for migratory waterfowl primarily along the Bonasila River. In addition, numerous lakes and areas along the Yukon river are used for waterfowl hunting. Residents from Shageluk and Holy Cross typically hunt waterfowl in much the same area as they hunt moose.

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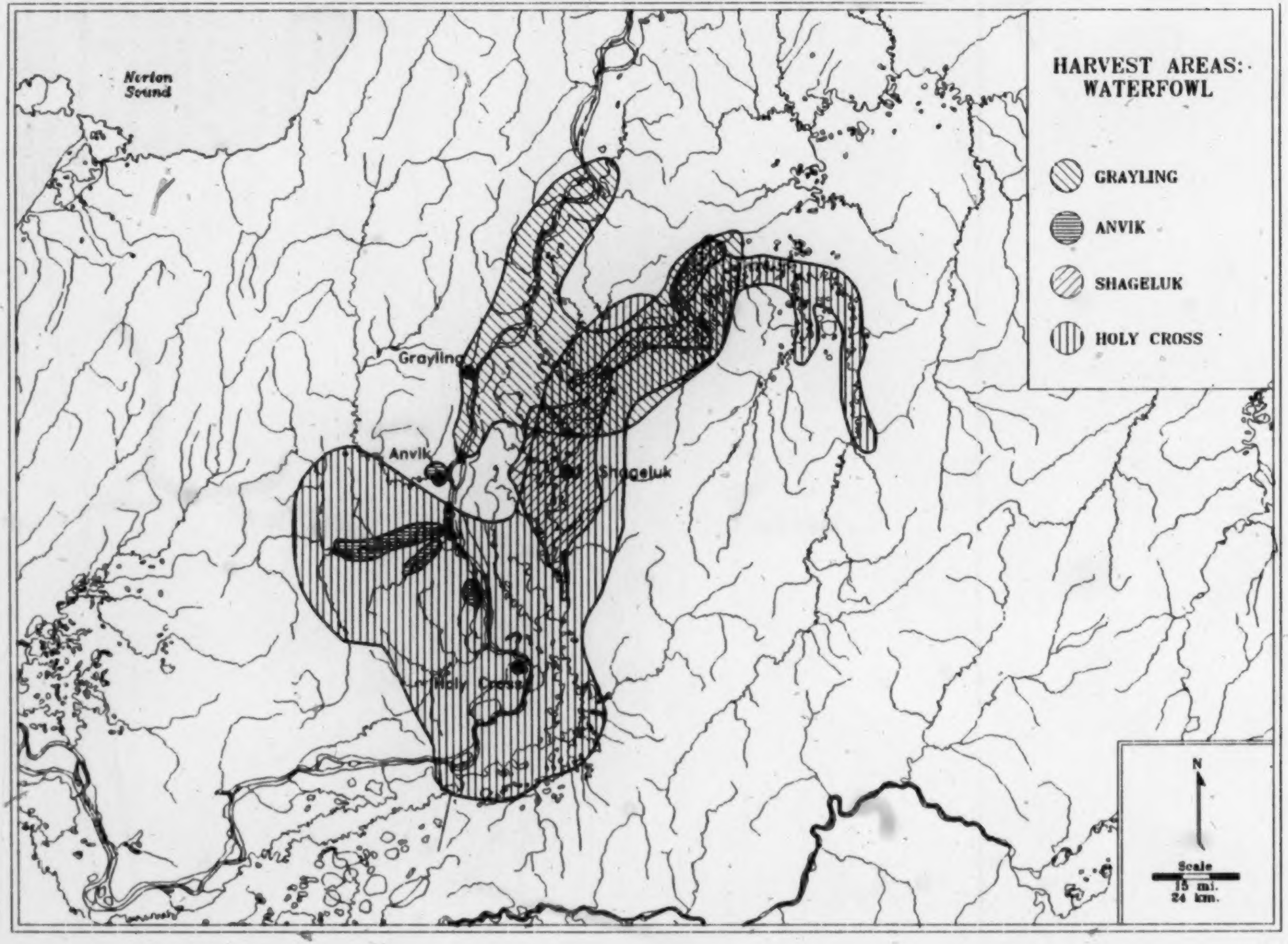
[104] Like the harvest of moose during trapping activities, the harvest of waterfowl during moose hunting is a secondary, opportunistic use of seasonally available resources.

Map 8. Duck and Geese Hunting Areas, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.


Norton Sound
Grayling
Anvik
Shageluk
Holy Cross
HARVEST AREAS: WATERFOWL
GRAYLING
ANVIK
SHAGELUK
HOLY CROSS
N
Scale
15 mi.
24 km.

Berries and Greens

Of all the activities, gathering has the highest levels of household participation in all four communities. These high rates of are likely related to the fact that anyone who is mobile can get to some berry picking area or a source of greens. Greens harvested include Indian potatoes, wild rhubarb, wild celery, and Labrador tea. Berries harvested include blueberries, salmonberries, gooseberries, and cranberries.

While a substantial amount of wood is harvested in the area, a consistent measure was difficult to ascertain. Most of the households in Grayling collect wood, testimony to the long, cold winters that characterize the area. Households in all four communities used wood as a primary source of heat (see discussion in Chapter 4). In addition to collecting wood for use as a source of heat, people collected wood for construction (i.e., houses, tent frames, fish drying racks, etc.); and this quantity was difficult to assess.

The estimated quantity of berries, greens and wood gathered by residents of the four communities is shown in Tables 44-47. Of the berries gathered, cranberries comprised the vast majority (65 percent) of the total berry harvest. About half as many blueberries were picked, and relatively few salmonberries. Collecting plants, greens, and mushrooms was an activity in which few households participated, as represented in the low contribution to the overall harvest. A total of 8.2 pounds per capita of berries and greens and 664 cords of wood were harvested by Grayling residents during the study year.

Table 44. Berries and Greens Harvested by Residents of Grayling, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Berries	80.5	1,669	35.5	8.2
Blueberries	63.4	578	12.3	2.8
Cranberries	65.9	1,078	22.9	5.3
Salmonberries	4.9	14	.3	.1
Plants/Greens/Mushrooms	19.5	56	1.2	.3
Wood	97.6	664 cords		

Residents of Anvik gathered considerably less berries, greens, and wood than Grayling residents. A total of 3.4 pounds per capita of berries and greens and 253 cords of wood were harvested by Anvik residents. In contrast to Grayling, however, more blueberries than cranberries were harvested; and almost as many salmonberries as cranberries were harvested. No greens, plants, or mushrooms were harvested by Anvik residents.

Table 45. Berries and Greens Harvested by Residents of Anvik, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Berries	66.7	331	10.7	3.4
Blueberries	50.0	134	4.3	1.4
Cranberries	37.5	103	3.3	1.1
Salmonberries	16.7	93	3.0	1.0
Plants/Greens/Mushrooms	0.0	0	0.0	0.0
Wood	75.0	253 cords		

Roughly half of the households in Shageluk participated in harvesting berries; and almost all households harvested wood, as illustrated in Table 46. No households gathered greens and plants. A total of 2.6 pounds per capita of berries and 221 cords of wood were harvested by residents of Shageluk.

Table 46. Berries and Greens Harvested by Residents of Shageluk, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Berries	53.1	320	8.0	2.6
Blueberries	40.6	200	5.0	1.6
Cranberries	9.43	50	1.3	0.4
Salmonberries	31.3	70	1.8	0.6
Plants/Greens/Mushrooms	0.0	0	0.0	0.0
Wood	93.8	221 cords		

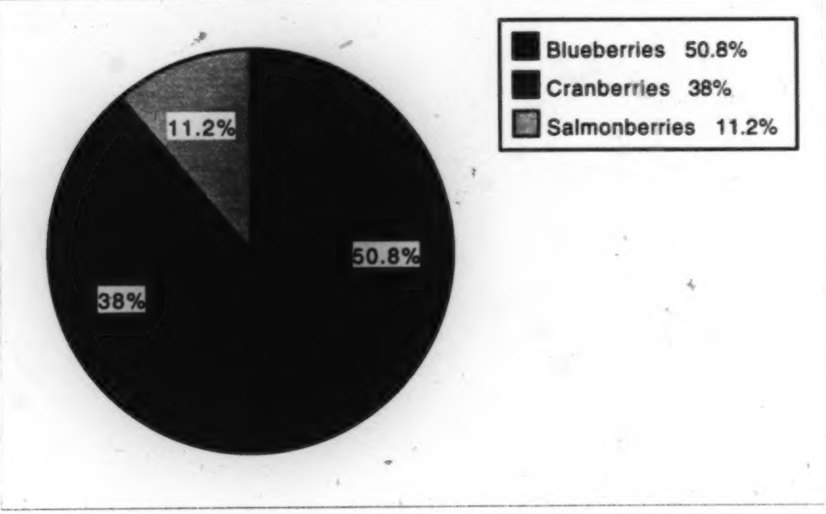
More than half of the households in Holy Cross gathered berries and wood. A total of 8.8 pounds per capita of berries and 298 cords of wood were gathered by Holy Cross residents during the study year. In comparison to the other three villages, more households in Holy Cross participated in gathering greens and other plants. As in Anvik, blueberries comprised the majority of the berry harvest; and cranberries and salmonberries were roughly equally represented in the harvest.

Table 47. Berries and Greens Harvested by Residents of Holy Cross, 1990-1991 (Source: Field Data).

	Estimated Community Totals			
Resource	Percent of Households Harvesting	Edible Pounds Harvested	Household Mean Harvest	Per Capita Harvest
Berries	66.7	2,418	29.1	8.8
Blueberries	66.7	1,405	16.9	5.1
Cranberries	33.3	502	6.1	1.8
Salmonberries	35.9	511	6.2	1.9
Plants/Greens/Mushrooms	18.0	1,057	12.76	3.9
Wood	64.1	298 cords		

In summary, more than half of the households in the four villages participated in picking berries and collecting greens and plants and wood. From 64.1 to 97.6 percent of the households collected wood. Grayling reportedly harvested the most wood, followed by Holy Cross, Anvik, and Shageluk. Grayling also harvested the most pounds per capita of berries and greens and plants, and Shageluk harvested the least. In Grayling, cranberries comprised the bulk of the berries harvested; but in all three other communities, blueberries provided the bulk of the berry harvest. As Figure 33 illustrates, blueberries comprised roughly half (50.8 percent) of the total berry harvest in all four communities, cranberries comprised 38 percent, and 11.2 percent of the total berry harvest was salmonberries.

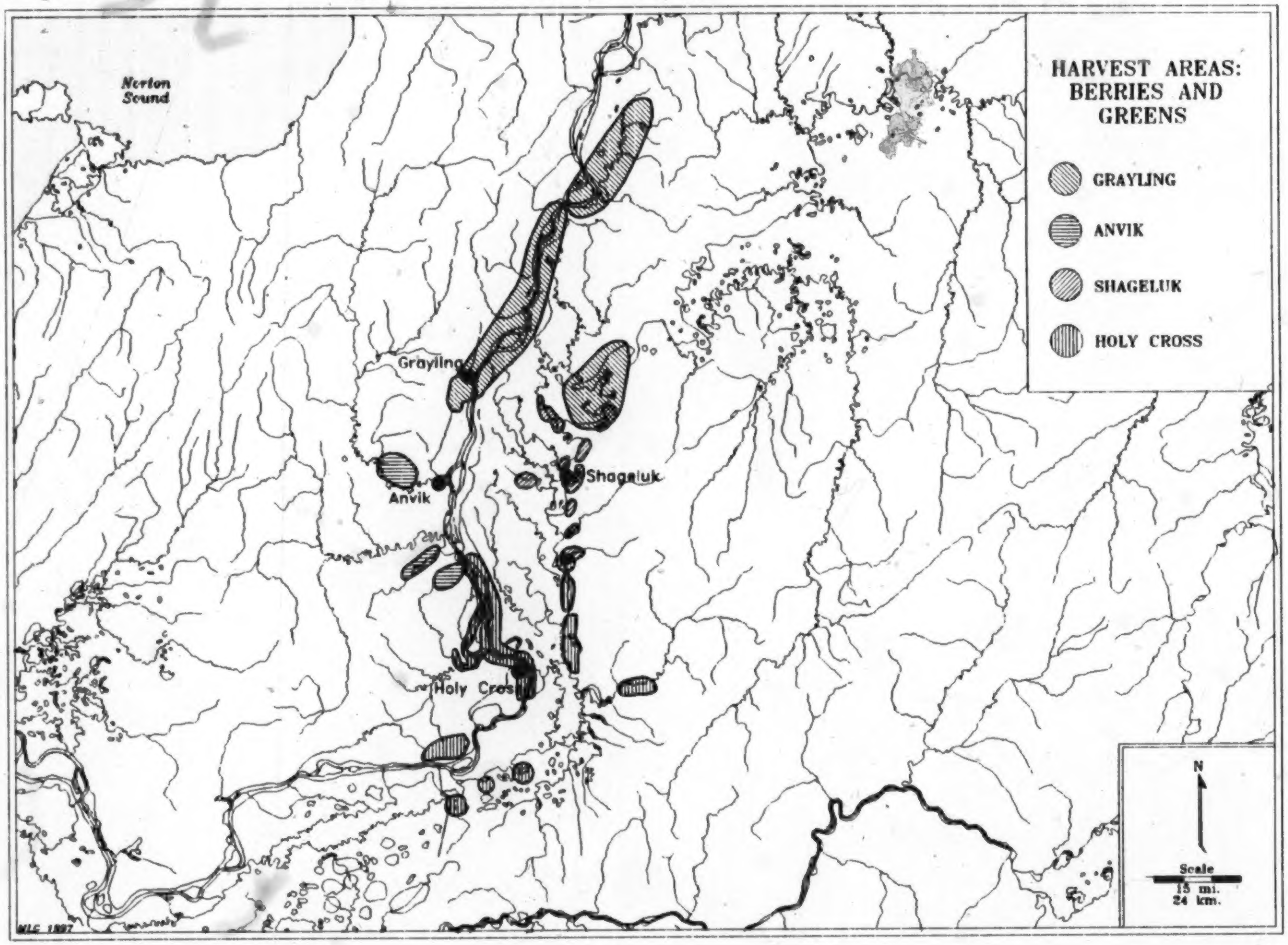
Figure 33. Relative Percentage of Berries Harvested by Weight, Grayling, Anvik, Shageluk, Holy Cross, 1990-1991.



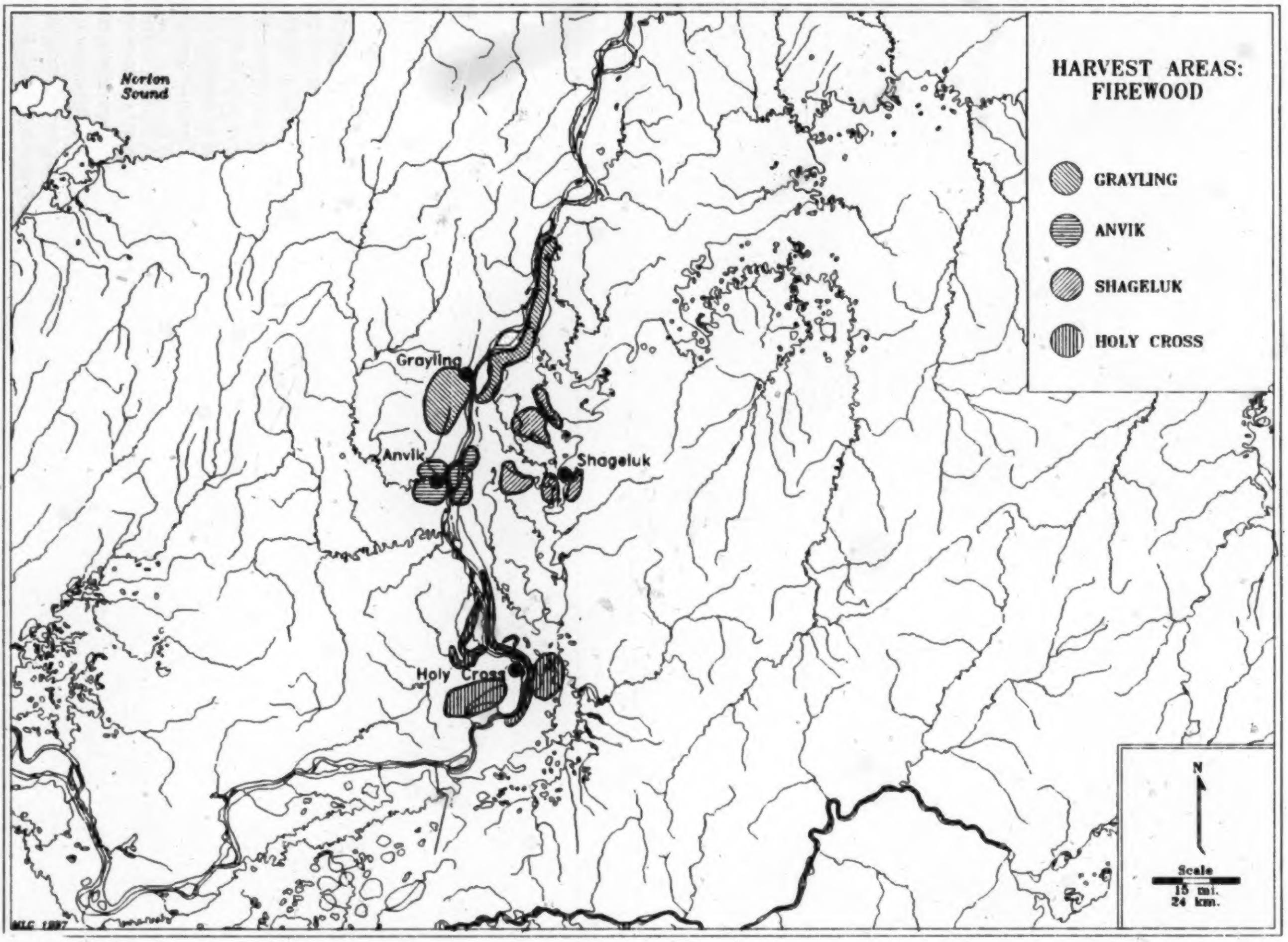
Map 9 illustrates the areas used by residents of Grayling, Anvik, Shageluk, and Holy Cross for gathering berries and greens. Berry grounds utilized by Grayling residents include the area around Grayling, both sides of the Yukon River from just below Grayling up to Blackburn Island, and the east side of the Yukon from Blackburn Island up to Bullfrog Island. Anvik residents gather berries along the Anvik River, and a few areas along the Yukon River. Shageluk residents pick berries along the Innoko River. Holy Cross residents gather berries along the Yukon River from Paimiut up until roughly ten miles above Holy Cross, among other areas.

Wood is typically harvested in places either close to the village or within easy access to water. A total of 1436 cords of wood were reportedly collected by residents of the four communities, and Grayling collected almost half (46.2 percent) of that amount. Map 10 provides a summary of the areas used for gathering wood by residents of the four communities during 1990-1991. Grayling used the largest area for wood collection (352.6 square kilometers), collecting wood within a twenty miles radius of Grayling, and along the Yukon River from Grayling up to Bullfrog Island. Anvik residents used the smallest

Map 9. Berry and Green Hunting Areas, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.


Norton Sound
Grayling
Anvik
Shageluk
Holy Cross
HARVEST AREAS: BERRIES AND GREENS
GRAYLING
ANVIK
SHAGELUK
HOLY CROSS
N
Scale
15 mi.
24 km.
MLC 1997

Map 10. Wood Harvesting Areas, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.


Norton Sound
Grayling
Anvik
Shageluk
Holy Cross
HARVEST AREAS: FIREWOOD
GRAYLING
ANVIK
SHAGELUK
HOLY CROSS
N
Scale
15 mi.
24 km.
MLC 1987

area for wood collection, collecting within about ten miles of the community on either side of the Yukon and Anvik Rivers. Shageluk collected wood within about 20 miles of the village, largely along the Innoko River and Shageluk Slough. Finally, Holy Cross residents collected wood along the Yukon river across to Salmon Island and Red Wing Slough and in the area of Big Bend Slough and Crooked Lake. The area between the Innoko River and the Yukon River, around Horseshoe Lake was used to gather house logs.

Summary and Conclusions

As this discussion has illustrated, a one-year sample of resource use during the 1990-1991 study year, illustrates that the Doy *hi'tan* and *Deg hi'tan* harvest a considerable amount and a wide variety of resources. Almost all households hunted, fished, trapped, or gathered resources of some kind in 1990-1991; the small minority that did not engage in these activities attained food resources through trade, barter, or in some instances, through purchase.

Moose was a staple resource to all of the communities during the study year, providing the majority of the large mammal protein in all four communities, and all of the large animal protein in Shageluk. While people expressed interest in harvesting caribou, the distances and expense involved limited that activity to only a few households. People in three of the four communities reported hunting black bear, and in two of the four communities brown bear were reportedly harvested. Overall, however, bear harvests were relatively low, accounting for only 1.5 percent of the total large mammal harvests. Given the strong cultural and spiritual parameters associated with hunting bear, particularly brown bear, it is likely that reported harvests were under-reported.

Fishing was extremely important as well, providing from 31.9 percent of the overall harvest in Holy Cross to 67.3 percent of the total harvest in Shageluk. Salmon accounted for more than half of the fish harvest in all four communities. Of the non-salmon fish harvested, whitefish, sheefish, and pike accounted for the majority in all four communities. The harvest of ducks and geese was about evenly split between fall and spring, and the latter was particularly valued as the first source of fresh meat in the spring. Fur bearers, some valued for both their meat and furs, while not a major part of the overall harvest, were nonetheless an important component. Finally, berries and greens were collected, as was wood (both for heat and for construction).

While the categories and terms (i.e., edible pounds per capita and mean household harvests in pounds) used to discuss harvests are etic in nature, and do not fully represent Indigenous valuations, they are nonetheless useful for examining extent and depth of resource use. Average household mean harvests varied considerably. Grayling was the highest at almost 4,000 pounds, and Shageluk was the lowest at under 1,500 pounds. Mean household harvest in Anvik was over 2,500 pounds, and in Holy Cross mean household harvest was just over 2,000 pounds. Similarly, pounds per capita varied, from a high of almost 900 pounds in Grayling to a low of about half that (445 pounds) in Shageluk. Per capita harvest in Anvik was about 50 pounds less than that of Grayling; and Holy Cross was in between Grayling and Shageluk, at about 634 pounds.

Explanations for this variance are multifold, and include the following: distances to the particular resource area (thus affecting time, money for gas, supplies and equipment); resource-use area available or open to the individual and the community; equipment available to the individual and to the community; and individual and community initiative, organization, and abilities. As explained in the previous chapter, demographic differences can also affect harvest patterns and resource use, as can availability of and participation in wage labor.

Overall, Grayling had the highest mean household harvest and the highest per capita harvest of all four villages. Grayling also had the largest average household size (4.3). Along with Holy Cross, Grayling had the highest percentage of households with full-time, year -round jobs. In addition, of the four communities, Grayling had the highest percentage of households owning snowmachines, boats, and kickers. Of the area used for moose hunting by the four communities, Grayling used the second largest area (in square kilometers).

In contrast, Shageluk had the lowest mean household harvest (about 35 percent of Grayling's) and the lowest per capita harvest (49.8 percent, or about half of Grayling's total harvest). Shageluk had the lowest percentage of households owning major subsistence equipment, and on average spent the least per household on non-equipment costs associated with subsistence (i.e., gas, etc.). Shageluk's employment was similar to the other three villages, with the one major exception that no one in Shageluk fished and few trapped for commercial purposes. This difference is particularly significant because these activities (commercial fishing and trapping) represent the only means to achieve both protein and cash simultaneously. Participation in hunting, fishing, and trapping was lower in Shageluk than in any of the other three villages, though Shageluk showed higher participation rates in gathering than did Holy Cross. Total area utilized for moose hunting was smaller for Shageluk than for Grayling and Holy Cross.

So, what does this tell us, aside from pointing to the variety of factors affecting resource use at the community level? Data point to the importance of owning the equipment needed to access areas for subsistence. Also, data point to the need for cash to buy equipment and gas and other supplies to go out and hunt, fish, trap, or gather. Further, these data suggest that within certain limits, resources will be hunted, fished, trapped, and gathered. Even Shageluk, with the lowest per capita harvest, and the lowest mean household harvest, still managed to harvest a considerable amount and variety of resources. The data also suggest that an individual community's desire, ability, and organization to attain resources, be it equipment, cash, or food, is an important determining factor to a community's success in that arena.

Another important point brought out by this examination of resource use is that whether or not a resource is potentially commodifiable does not appear to affect its use for subsistence purposes. For example, salmon is caught for both subsistence and commercial purposes; and it is used for both, to a large degree, as commercial roe sales and the subsistence salmon harvest illustrate. Similarly, while trapping provides furs which can be sold, people placed the value of trapping not in the furs, but rather in the fact that trapping allows people the opportunity to get out on the land.

The interplay between material resources (i.e., cash, equipment, supplies) and the ability to procure subsistence resources is clearly demonstrated. Historical use of non-indigenous material culture for indigenous pursuits is not anathema to a "subsistence" economy. How these resources brought by Euro-American contact have come to be incorporated within community life will be discussed later. Suffice it to say that in contemporary lower Yukon communities, cash and the procurement of resources through subsistence pursuits are intimately linked, as the data discussed in this chapter have demonstrated.

CHAPTER SIX:
Deg Hi'tan and Doy hi'tan Patterns of Land and Resource Use

Introduction

As the previous chapters indicate, Deg hi'tan and Doy hi'tan reliance on the land's fish and game resources is not only an integral part of their economy, but also an important aspect of what it means to be Deg hi'tan and Doy hi'tan. A critical component of land and resource use is its seasonality; that is, the relationship between the resources and the lands and waters utilized at any given point in time is characterized by variable needs, environmental influences, and transportation methods, in addition to individual ability to access/harvest resources, and contemporary settlement patterns.

While Deg hi'tan and Doy hi'tan methods of production, distribution, and exchange undoubtedly change through time, contemporary patterns of land and resource use are inexorably tied to their historic antecedents. I therefore begin this chapter by discussing historic patterns of land and resource use. Following this, I turn to contemporary patterns of land and resource use, examining the seasonality of land and resources used during the 1990-1991 study year.

Historic Patterns of Resource and Land Use

Since there is a paucity of data on Doy hi'tan resource use, this discussion of historic patterns of land and resource use, based primarily on Nelson (Nelson 1887; Vanstone 1978) and Osgood (1940, 1958, 1959) focuses largely on the Deg hi'tan. Given the similarity in resource bases, however, it is likely that with subtle differences, the Doy hi'tan followed similar patterns of resource use. E.W. Nelson (Nelson 1887; Vanstone 1978) provides one of the first comprehensive accounts of resource use as it was practiced around the turn of the century.

The Deg hi'tan have been regularly recognized for their fishing technology and abilities (Loyens 1966; Osgood 1940, 1958, 1959; Sullivan 1942; Vanstone 1974). Perhaps not surprisingly, they are commonly referred to primarily as fishermen: their hunting abilities are considered secondary to fishing, as is illustrated in the following statement by VanStone (1979b: 20-21):

> The Ingalik inhabitants of the lower-middle Yukon Taiga environment in the 19th century practiced all three of the basic gathering activities-hunting, fishing and collecting. Fishing, however, was more important than either hunting or collecting, although both had significant places in the yearly cycle of subsistence activities. Hunting supplemented the primary food supply of fish and provided skins for clothing. Plant products, primarily berries, were, at certain times of the year, a significant supplement to the fish and meat diet. Although many different fish are present in the Ingalik environment, salmon were, and are, the most important and predictable food item. To a very large degree, the yearly subsistence cycle focused on the seasonal migrations of fish and a considerable amount of Ingalik technology centered on the taking of fish.

While the fishing abilities of the Deg hi'tan were and are notable, the supposition that the Deg hi'tan were first fishermen and second hunters is a matter of opinion. The period for which information on Deg hi'tan subsistence patters is available-- that is, from the late 1800s on--has been characterized by intermittent and often devastating crashes in both caribou and moose populations.[105] For example, while Zagoskin (1967[1847]) reported both moose and caribou populations to be "numberless" in the 1840s, in the late 1800s, the caribou population crashed in the Interior (Cantwell 1902; Petroff 1900; Stuck 1917). It was not until the time of Osgood's fieldwork (1930s) that caribou populations were returning to pre-crash levels. While the moose population was reportedly plentiful during the mid 1800s, it crashed shortly thereafter (Vanstone 1979b: 129). By the late 1800s, however, moose were reappearing in the area of Grayling, Anvik, Shageluk and Holy Cross (Petroff 1900: 5). Moose and caribou population shifts profoundly influenced the focus of Deg hi'tan and Doy hi'tan subsistence. That the Deg hi'tan were allegedly fishermen at the time of Nelson's work was therefore likely a function of resource availability or unavailability.

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[105] Along these lines, Freeman (1988: 151) claims the following:

> ... There is one other feature of the arctic environment that is also distinctive and has important ecological consequences for the human occupants. I refer to the fluctuating population levels of many arctic and boreal species, especially the terrestrial species. The peaks and crashes of tundra-dwelling lemming populations are well known, as are the longer periodicity fluctuations of snowshoe rabbits and their predator lynx in the boreal forest region. There is also strong evidence to suggest that important large game and fish populations (for example, those of the caribou and salmon, respectively) may very considerably over time. When the resource shortages occur over very large areas and restocking takes decades, the human population responses may be quite different from those employed to overcome mere seasonal shortages or even predictable resource scarcity of a year or two duration.

Rather than being tied primarily to one or another resource, therefore, the Deg hi'tan were likely equally skilled in hunting, trapping, and gathering; it was the availability (factors influencing availability include presence or absence of resource, travel conditions, equipment availability, etc.) of resources which directed their subsistence focus. Because flexibility and adaptability are hallmarks of seasonal resource use,[106] the ability of the Deg hi'tan and Doy hi'tan to redirect their subsistence focus regularly should not be surprising. It is likely more accurate, therefore, to refer to the Deg hi'tan as people who were and continue to be proficient at hunting, fishing, and gathering: the focus of activities at any point in time is likely a function of the accessibility of available resources.

Historical accounts indicate that in addition to large mammals such as moose, caribou, brown and black bear and fish (primarily salmon and whitefish), Deg hi'tan also relied heavily on small game and birds. As with other hunting and gathering groups, smaller mammals and birds often provided important sources of protein during lean times; i.e., periods of intermittent availability of larger mammals and fish.

An illustration of 'traditional' Deg hi' tan resource use patterns as documented by Osgood (1958: 280-281) is provided in Figure 34. It should be noted that while he conducted his fieldwork in the 1930s, Osgood's accounts represent Deg hi'tan culture as it was around the turn of the century. Seasonal use of resources is dependent on a number of variables, and changes constantly; therefore this seasonal round is a static representation of diachronic phenomena. Osgood's representation of the Deg Hi'tan seasonal round begins in the Western calendrical year, although it has been suggested that the year is best viewed as beginning in springtime, with the end of winter.[107]

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[106] In regards to flexibility, VanStone (1974: 125) offers the following warning:

> ...In stressing flexibility and accommodation, however, we should not lose sight of a simple and very basic truth that applies to all areas where hunting peoples have exploited their environment: the expert hunters' most important attributes have always been knowledge and intelligence, both highly individual matters. The more a man knew about his environment and the multitude of exploitative techniques that were part of his cultural heritage, the better equipped he was to deal with the environment effectively. Specialized knowledge is in itself an adaptive strategy, and it is indicative of the versatility of northern Athabaskans that they have been able to adjust satisfactorily to a number of environmental circumstances....

The 'Traditional' Deg hi'tan Seasonal Round

Springtime was generally a time of resource paucity for most Indigenous inhabitants of Alaska: there was little fresh meat, and stocks of dried fish prepared the summer before were dwindling. During this time, as with most other times of year, small mammals and birds provided limited supplies of fresh meat, and moose and caribou were also the object of hunting efforts (Loyens 1966; Nelson 1983, 1986; Nelson, et al. 1982; Osgood 1958; Sullivan 1942; Vanstone 1974)

From pre-contact times into the twentieth century, the most common means by which caribou were hunted was with the use of caribou fences and surrounds (Osgood 1940, 1958; Zagoskin 1967[1847]). According to historical accounts, caribou were driven into surrounds by a group of people including women and children. Once in the surround, the caribou were caught with previously set snares. In addition, caribou were hunted by individuals using arrows, snares, and lances. Surrounds were commonly used in the fall; arrows, lances, and snares were typically used during the rest of the year, particularly in winter (Osgood 1940: 251; 1958: 292).

According to Zagoskin (1967[1847]), black and brown bear were also hunted in the spring, typically with bone tipped lances, as they came out of hibernation. Deadfalls and snares were also used to hunt brown and black bear (Osgood 1940).

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[107] Nelson (1983: 9) notes that, "... In a sense the subsistence year begins with spring-- the living environment is renewed and the seemingly endless austerity of winter is swept away on a rush of warmth."

Figure 34: Historic Deg Hi'tan Seasonal Round (modified from Osgood 1958: 280- 281).

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec.
Caribou	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxXX	XXX	XXxx	xxxx	xxxx
Moose	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Black Bear					XXX	XXX	XXX	XXX	XXX	XXX		
Beaver	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Muskrat			xxxx	xxxx								
Lynx	xxxx	xxxx	xxxx							xxxx	xxxx	xxxx
Rabbit	xxxx	xxxx	xxxx							xxxx	xxxx	xxxx
Porcupine	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	XXX	XXX	XXX	xxxx	xxxx
Ground Sq.			xxxx	xxxx	xxxx							
Chinook salmon					XX	XXX						
Chum salmon					X	XXX	XX					
Coho salmon					XXX	XXX						
Pink salmon				XXX	XXX	XXX	X					
Sockeye salmon					X	XXX	XXX	XX				
Whitefish	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Grayling			XXX					XXX	XXX	XXX		
Jackfish	xxxx	xxxx	xxxx		xxxx					xxxx	xxxx	xxxx
Salmon trout		XXX								XXXX		
Loche	xxxx	xxxx	xxxx								XXX	XXX
Blackfish	xxxx	xxxx	xxxx		xxxx						xxxx	xxxx

KEY: xxx- period of availability XXX - period of concentrated catch

Beaver and marten were the focus of both hunting and trapping in March and April, most commonly along tributaries of the Yukon, in addition to the numerous sloughs Figure (Osgood 1940; Vanstone 1978). Beaver and marten, in addition to other small fur bearers, were also hunted by canoe when the water was high. During the winter, beaver were commonly hunted with clubs and arrows, although in the fall deadfalls were also used.

Breakup generally occurs between mid-April and mid-May, with obvious annual variation.[108] Around breakup, migratory waterfowl arrived: upon their arrival, they provided an important source of both eggs and meat. Deg hi'tan hunted waterfowl primarily in the spring, as they provided the first source of fresh meat at a time when fresh food was scarce (Loyens 1966; Sullivan 1942; Vanstone 1979b). State and Federal regulations currently prohibit spring waterfowl hunting, although it is likely that this fact does not prevent this important cultural practice (as the following discussion will illustrate). Prior to the introduction of rifles and shot guns, waterfowl were harvested with bow and arrow or, when they were flightless because of molting, with snares (Osgood 1940, 1958; Vanstone 1978).

Following the springtime harvest of migratory waterfowl, people turned their attention to fishing (Loyens 1966; Osgood 1940, 1958; Vanstone 1978, 1979b). During spring fishing, dip nets were used in the main channels and in tributaries; and gill nets or wicker traps were set in tributaries. Fish that were caught included whitefish, sheefish, grayling and pickerel. According to some sources (Loyens 1966; Osgood 1940, 1958; Sullivan 1942; Vanstone 1979b), whitefish were the most important of the fish taken. Their value may be attributable to their sheer volume, as whitefish were the most numerous of all the fish species taken in springtime.

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[108] "Breakup" is referred to by Nelson (1983: 10) as ".... an exciting and important event, perhaps the most dramatic seasonal transition in interior Alaska..." Breakup refers to the transition from winter to spring, most commonly noted by the melting of snow; and more importantly, the river ice. The amount of snow and average temperature during winter and spring rains all directly affect the time of breakup.

Once the whitefish had passed, the focus turned from fishing to trading. People traveled to different established areas to trade fairs, where they exchanged many and varied goods (Osgood 1940, 1958; Vanstone 1978, 1979a, 1979b; Zagoskin 1967[1847]). During Zagoskin's visit (1840s), the Deg Hi'tan traded with the Kuskowagmiut, and also with Inupiat who came over from Norton Sound via the Anvik River. These trading relationships and established routes were in existence long before European contact. In fact, much of the initial Euroamerican contact involved intense exploration for indigenous trade routes (cf. Andrews and Koutskey 1977).

Following the trade fairs, people returned home to their fish camps to prepare for the salmon runs (Loyens 1966; Osgood 1940, 1958; Sullivan 1942; Vanstone 1979b). While some small animals were taken opportunistically (e.g., marten, beaver, squirrels), and geese and ducks were taken throughout the summer, salmon fishing constituted the single most important activity of the summer. Berries and greens were also gathered in late summer.

On the Yukon River, the king salmon is generally the first to arrive, followed by the dog or chum salmon and even later by the silvers. In general, salmon fishing occurred from fish camps which were spread out along the Yukon River (de Laguna 1936b, 1947; Nelson 1887; Vanstone 1978, 1979a). People living in the vicinity of present-day Anvik tended to situate themselves along the Anvik River, as all three species of salmon traveled by during the course of the summer (Cantwell 1902; Chapman 1903, 1906, 1913; Nelson 1887; Osgood 1940, 1958; Vanstone 1978, 1979a). Few salmon ascend the Innoko River. According to Zagoskin (1967[1847]) and Nelson (1887; Vanstone 1978), the people who are settled in the vicinity of present day Shageluk and Holikachuk moved over to the Yukon River to fish camps for the duration of the salmon runs:

> ... fish camps of Indians from Koserefsky and Anilukhtakpak, a community formerly located near Holy Cross, were, for the most part, situated on the right bank of the Yukon between the mouth of the Bonasila River and the Eskimo village of Paimiut.. (Vanstone 1978: 24-25).

Depending on the species, salmon were caught with dip nets and traps (Loyens 1966; Osgood 1940; Sullivan 1942; Vanstone 1979b). In addition to being the first of three species to ascend the Yukon River in the spring, thus providing a sign that spring has arrived, King salmon were the most prized of the eating fish, largely due to their high oil content. Also, the size and generally good quality meat made them a highly sought after fish. Dip nets were the most common means of harvest of King salmon.

Following the king salmon run were the dog and silver salmon runs. Dog and silver salmon were usually taken with gill nets and wicker fish traps (Osgood 1940: 214, 236-237). The traps were an efficient means to harvest dog salmon, since unlike king salmon, they tend to ascend the river along the banks. According to Chapman (1913: 50), the introduction of the fishwheel in the area around the turn of the century did not immediately displace fish traps.[109] VanStone (1979b: 183) concurs, adding that "... Fishwheels were in general use by the Ingalik by 1913-1914, but they apparently did not replace traps immediately."

Dog and silver salmon were taken in greater quantity than were king salmon (Loyens 1966; Nelson 1887; Osgood 1940, 1958; Stuck 1917; Vanstone 1978). Dog and silver salmon were commonly cut and dried to provide the majority of the winter food . Additionally, dried dog salmon provided the primary source of dog food.

It was not uncommon for the silver salmon run to continue into September, and they were harvested throughout this time. Freezeup usually occurred from mid-September to mid-October. Before rivers froze over, short trade trips often occurred; bundles of dried fish were traded to coastal people in exchange for seal oil and other marine mammal products (Andrews and Koutsky 1977; Zagoskin 1967[1847]). Following the end of salmon fishing, people generally left fish camps and returned to the winter settlements (Nelson 1887; Osgood 1940, 1958; Vanstone 1978).

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[109] Brought up from the Columbia River and introduced to the Yukon River around the turn of the century, the fishwheel almost universally replaced the fishtrap within twenty years of its introduction (Loyens 1966; Sullivan 1942; Vanstone 1974). The fishwheel allowed for increased catches and greater efficiency; which, some have argued, allowed people to keep larger dogteams, but also for the first time created "surplus" harvests (Loyens 1966; Sullivan 1942; Wheeler 1987). The surplus fish were available for sale to traders, mail carriers, missionaries, and the military-- all of whom used large dog teams and relied on local fishermen for their supply of dried salmon for dog food. As noted by this author (Wheeler 1987), the surplus catch fishwheels provided allowed local people to become more actively involved in the local trade of salmon.

The primary fall time activities were fishing and hunting (Loyens 1966; Sullivan 1942; Osgood 1940; Zagoskin 1967[1847]). At freezeup, traps were set in tributaries to catch the different species of whitefish, which typically run just after freeze-up. Other fish taken during this time included pike, jackfish, Dolly Varden, Arctic Char, blackfish and loche. According to Vanstone (1979b: 216), traps were the most commonly utilized form of harvesting fish, although gill nets and dip nets were used before the river completely froze over.

Another staple to the people of the area were eels (Chapman 1906, 1913; Vanstone 1979b). Eels, which ascend the Yukon in late November, were an important source of oil and meat. They were caught with a dip net fashioned specifically for their harvest (Osgood 1940).

As described by Osgood (1940, 1958) and Vanstone (1978, 1979b), moose and caribou were the major focus of fall hunting. In general, moose were hunted by individuals using a bow and arrow, or guns of various sorts. In contrast, caribou were typically hunted by large groups of people. The caribou were directed towards surrounds, where they were dispatched with snares, lances, bow and arrow, and later on, rifles. Both brown and black bear were occasionally hunted during the fall time; as in spring, they were usually taken with snares and deadfalls.

In addition to fall fishing and hunting activities, limited trapping also occurred. The most commonly trapped animals in fall time were fox, lynx, land otter, beaver, squirrel, ermine, marten, and mink. Prior to the introduction of commercially available traps, animals were typically trapped with snares and deadfalls (Osgood 1940, 1958; Vanstone 1979b).

As described by Osgood (1940, 1958), trapping continued through the fall and into the winter. In addition, limited hunting also took place during this time. By the end of December the days were short and cold, and all but the most necessary outside activity was curtailed. People continued to gather wood; and snares were set for small game, particularly ptarmigan and hares. As is true of most of rural Alaska, the coldest and darkest of the winter days were spent conducting ceremonies, feasting, and visiting (Nelson 1983; Nelson, et al. 1982; Osgood 1958; Vanstone 1974; Zagoskin 1967[1847]).

By the middle or end of January, increased light allowed greater outdoor activity. Hunting and snaring of small animals and fishing continued to provide protein sources (Osgood 1940, 1958; Vanstone 1979b; Zagoskin (1967[1847]). Fishing was accomplished through setting traps in tributaries for whitefish, pike, and ling cod. According to Chapman (1906, 1913), pike and blackfish were also commonly taken with lure-hooks in lakes during winter.

These activities continued through the next several months, by which time the cycle was ready to start again, as winter changed into spring. Deg hi'tan and Doy hi'tan resource use changed constantly, dictated in large part by the time of year and by resource availability. Similarly, methods and means of harvesting resources changed often; and were often directly and fundamentally influenced by the introduction or borrowing of new technology, or altering existing technology. In spite of these variables, a general pattern of historic resource use can be determined. Similarly, a pattern typical of contemporary resource use can also be described. In addition to being dictated by the seasonal availability of resources, contemporary Deg hi'tan resource use is also conditioned by technological parameters and regulations, as well as the need for resources introduced, and now integrated, from Euroamerican systems.

Contemporary Pattern of Land and Resource Use

Contemporary residents of Grayling, Anvik, Shageluk, and Holy Cross expend considerable effort, time, and money annually on hunting, fishing, trapping, and gathering. This effort is conditioned by abundance of resources, other ecological and environmental conditions,[110] and man-made constraints,[111] all of which figure in the intensity, duration, and timing of subsistence efforts. These efforts emerge into a general pattern of resource use as depicted in the following discussion and elucidated in the accompanying figures, tables, and maps.

According to residents of the four villages, "springtime" is best defined as beginning around the time of, or just prior to, breakup. In terms of activities, spring begins around the time that trapping ends; or, alternatively, around the time that migratory waterfowl return. Summer begins with first arrival of salmon, and ends following the major salmon runs. In terms of resource harvesting, the focus of summer is fishing, specifically salmon fishing. Fall begins after the major salmon runs are over, and ends around the time of freezeup. Major harvesting activities occurring in fall include migratory waterfowl harvesting, moose hunting, and collecting berries. Winter time begins around the time of freezeup and runs through the end of trapping, which also provides the major winter-time harvesting activity. Clearly the timing of all seasons is relatively variable and contingent on environmental and ecological factors.

The following discussion is based on the 1990-1991 study period. While each year is different, and use of land and resources changes through time and because of spatial and extant factors, the following pattern can be said to be generally illustrative of contemporary Deg hi'tan and Doy hi'tan resource use. Annual variation does occur, and in time new patterns are likely to emerge. After discussing the general pattern of resource use, I then turn to specific seasonal aspects of resource harvesting.

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[110] Ecological and environmental conditions include such events as flooding, fires, weather, altered migration patterns, etc. In Spring 1989, there was a huge flood, which essentially turned the area around Shageluk into a giant lake. People are still feeling the effects of the flood, as many moose calves and other animals drowned, and the fish habitat was changed. Another example of ecological patterns altering resource use patterns is the caribou-- if and when they migrate closer to the area, they will be directly incorporated into the resource base.

[111] Man-made constraints include availability or lack thereof of equipment, wage employment, familial or community events (i.e., death, birth, etc.), meetings, etc.

As was the case historically, early spring is generally not a resource-rich time of year.[112] Except for the occasional beaver, marten, or hare, trapping is essentially over. Limited springtime fishing occurs (although breakup and ensuing high water levels determines the extent to which fishing is possible). Species of fish harvested in spring include char, pike, grayling, trout, sheefish, and whitefish.

Limited effort is expended on hunting large mammals in spring. While moose hunting in spring is prohibited by regulation, a few moose are typically harvested each spring. As was the case in historic times, black and brown bear are both harvested in the spring, just as they are coming out of hibernation. Some hunters report that spring is the preferred time for hunting brown bear, especially. While the bears are skinny, since they are just coming out of hibernation, they lack the fishy taste of bears that have been eating salmon all summer.[113]

While black and brown bear are harvested, it is likely that harvests, particularly those of brown bear, go largely unreported. A strict code of behavior dictates that bear harvesting not be discussed.[114] Further, bear hunting in the area is highly restricted; and local ideology makes compliance with regulations, which require tagging and sealing of the bear skull, impractical (for further discussion, see chapter 7).

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[112] This is a slow time in terms of cash resources as well. Seasonal wage labor has not yet begun, nor has commercial fishing. Trapping is, for all intents and purposes, over. The aggregated public assistance payments to the four communities for June 1991 (based on previous three months income) exceeded any other quarterly payments in terms of actual number of payments/cases (120 for all four communities), and payment amount was the second highest in the year.

[113] Brown bear are primarily harvested in spring while black bear are harvested in fall. This difference may be due, in part, to the dietary habits of the animals, which could affect the quality and taste of the meat. For example, black bears are far more omnivorous than are brown bears, which tend to eat as much meat as possible; thus, whereas black bears will eat berries, plants, and roots, in addition to meat, brown bears favor eating salmon at the exclusion of plants and berries. These dietary preferences alter considerably the taste of the meat.

[114] See Brody (1982), Nelson (1978, 1983) and Ridington (1988, 1990) for further discussion of rituals and taboos surrounding both black and brown bears in Athabascan cultures.

Once migratory waterfowl return, people expend energy and expense on duck and geese hunting, usually harvesting about half of the annual take during that time. As was the case historically, following the springtime harvest of migratory waterfowl, people turn their attention to fishing. While a number of species are harvested, targeted species include whitefish, sheefish, char, pike, and grayling. Whitefish are an important resource to residents of all four communities. Although much of the focus on whitefish fishing occurs from late May through November, they are harvested year- round. Whitefish fishing most commonly takes place on the Yukon and Innoko Rivers. Sheefish and pike are taken at the same time that whitefish are harvested, typically with dip nets, set nets, and occasionally rod and reel. Following springtime fishing for non-salmon species, people turn their attention to getting ready for the salmon that ascend the Yukon and Innoko rivers. Preparations include cutting spruce poles for use in drying racks, tent frames, etc. in addition to mending nets, mending or building fishwheels, building drying racks, and getting the fish camps ready.

Salmon are taken in the late spring, throughout the summer, and into the fall. Chinook or king salmon ascend the Yukon River usually beginning in June. Chinook are followed (or overlapped) by summer chum salmon, and finally silver salmon usually arrive in August. Other fish taken during the summer include whitefish, sheefish, pike, grayling, trout, and char.

The arrival of the king salmon marks a critical time of year, and a time when almost all effort is directed at subsistence and commercial harvests of salmon. While subsistence fishing occurs year-round, summer and fall salmon runs are the most important in terms of sheer volume. Much of the subsistence fishing takes place at fish camps, although fishing also occurs near communities.

Because of their high oil content, king salmon are a prized fish, particularly by older people. Many younger people claim to like the silvers better, as they are less oily. King salmon are either frozen whole or cut into strips and smoked. Chum salmon are also harvested for subsistence purposes, typically with fishwheels. Chum salmon are caught on the Yukon River and on the Innoko River, where a substantial chum run occurs in summer. Summer chum are typically cut and dried, and eaten dried with seal oil.

The commercial fishery targets the females for their roe. After removal of the roe sack, the carcasses are typically dried and baled in bunches of fifty for later use as dog food. On occasion, a fat male chum is frozen whole. Silver salmon are usually frozen whole, or cut and smoked.[115]

Subsistence salmon are usually taken with drift or set nets,[116] largely because silvers and kings tend to travel in the middle of the river, where there is deeper water. Fishwheels and set gill nets are used for commercial purposes, although fishwheels are the preferred gear type. Fishing for subsistence purposes continues into the fall, with late-running salmon and whitefish as the targeted species.

Throughout summer and into the fall, berries and greens are gathered. Blueberries, cranberries, and salmonberries are most commonly harvested. Greens which are gathered include Indian potatoes, rhubarb, and Labrador tea. Environmental factors (i.e., late break-up, cold weather, too much rain or not enough rain) weigh heavily on the availability and timing of berries. The extremely wet summer of 1991 was blamed for the low availability of berries that fall. Berry picking usually runs through the late summer and well into the fall. During 1990-1991, the majority of the berry harvest occurred in the fall.[117]

After the last of the silver salmon run has passed, people turn their attention to moose hunting. The majority of moose harvested by residents of all four communities are taken in fall, although moose are harvested year- round. As in early historic times, birds (particularly ptarmigan and grouse) and small game (e.g., rabbits) are also harvested throughout the year. Since moose has taken on increasingly greater importance in terms of its spiritual[118] and food value, it is less likely that small game now provides a main source of sustenance as it had in the past.

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[115] Clearly, while commercial fishing provides cash resources, it also contributes to subsistence resources through the preparation of dried, smoked, frozen ,and fresh fish.

[116] Fishing with drift or gill nets is commonly referred to as "seining."

[117] The excessively wet summer may have impeded the growth of berries, thereby requiring a later than usual harvest.

People also harvest migratory waterfowl in the fall, generally getting about half of their annual harvest at that time. Other targeted species for fall hunting include black and brown bear, and small game such as ptarmigan and grouse. About two-thirds of the black bear, and one-third of the brown bear are harvested in the fall.

Fishing for whitefish and other non-salmon species continues into the fall. Roughly one third of the total whitefish harvest occurs in the fall, with the large runs that ascend both the Yukon and Innoko rivers.

Wood, which provides an important source of heat to many households, is gathered throughout the year. Effort is stepped up in the fall, likely in anticipation of the long, cold winter.

In early winter, eels are typically taken with dipnets through the ice on the Yukon River. Pike, sheefish, and blackfish are caught through ice on nearby lakes during winter. In addition, Shageluk residents construct a fence upstream of the community early in winter for the whitefish. The catch from this activity is distributed throughout the community.

Fishing occurs throughout the year, although in winter it is typically an individual activity; and hence this is a season of lower yields. People also harvest small game and birds throughout the winter.

A significant percentage of the overall moose harvest takes place in winter. While many people prefer to harvest moose as close to their communities as possible, trappers often take moose incidental to trapping.

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[118] Under Alaska State law it is currently legal to harvest moose for funerary potlatches, providing the correct paperwork is filled out prior to the harvest (which presents a problem for many people not wanting to talk about harvesting prior to the act), although it is not yet legal to harvest moose out of season for memorial potlatches. The rationale is that regulators feel that people can plan a memorial potlatch, and cannot plan funeral potlatches-- therefore they can plan their memorial potlatches for open hunting seasons. For further discussion on Alaskan Athabaskan potlatches, see Nelson (1973, 1983), Quinn (1995) and Simeone (1995).

Trapping and snaring of fur bearers continues to be an important late fall and winter activity. Trapping usually ceases in March, when increased daylight adversely affects the quality of the fur. In contrast to historic times, when springtime trapping was an important activity, little springtime trapping occurs today. Nearly every household has at least one member who traps. While dog teams are used by a few trappers, snowmachines are the most common means of getting to the trapping area. A few trappers also charter airplanes to take them out to their trapping area.

Targeted species for trapping include fox, marten, beaver, wolves, ermine, land otter, and lynx. All of these species are taken for personal use, trade/barter and for commercial purposes. Of these, marten and beaver are by far the most important. Beaver is utilized for both its meat and the fur. Beaver is a valuable fur to sell; and marten, while not particularly lucrative to sell, is a used extensively locally and commonly is used for trade and barter. Trapping is valued for both commercial and subsistence purposes.

Due to a lowered national and international demand for fur,[119] the cash value of trapping has decreased dramatically over the past decade. Nonetheless, many people continue to trap, often expending significant effort in doing so. This effort is likely attributed to the pride and symbolic importance of participating in subsistence. Trapping also provides an important source of material for barter, and furs are used in making hats and mittens for local use. Finally, many people attribute the importance of trapping largely to the fact that it gets them outside, living off the land. Being on the land is as important as the activity itself. Trapping usually occurs from late November through early spring, at which point the annual cycle begins again.

Caribou are not currently incorporated into the annual round. As previously discussed, few people hunt caribou today, though not for lack of desire. At present, extensive travel to harvesting areas (which requires both time and money) and regulations generally preclude that possibility. As indicated earlier, caribou provide a small part of the overall large mammal harvest (less than one percent overall). Due to locally perceived reductions in moose populations, people express an interest in hunting caribou. If caribou move closer to the region, it is likely they will be re-incorporated into the annual harvests. In 1990-1991, Anvik, Grayling, and Holy Cross harvested caribou: Anvik harvested 85.7 percent of the caribou in the winter and 14.3 percent in spring; Grayling harvested all of their caribou in summer; and Holy Cross harvested half of their caribou in winter and half in fall.

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[119] The proposed European Community Fur ban, extended once again in November 1995, continues to affect the fur market, as buyers are unwilling to take on large quantities of fur for fear they will not be able to sell it (Wilson 1995 pers. comm.).

Spring

Table 48 provides the percent of the total represented by springtime harvests for each of the four communities. Map 11 illustrates the area utilized and the resource harvesting activities undertaken in spring by residents of all four communities.

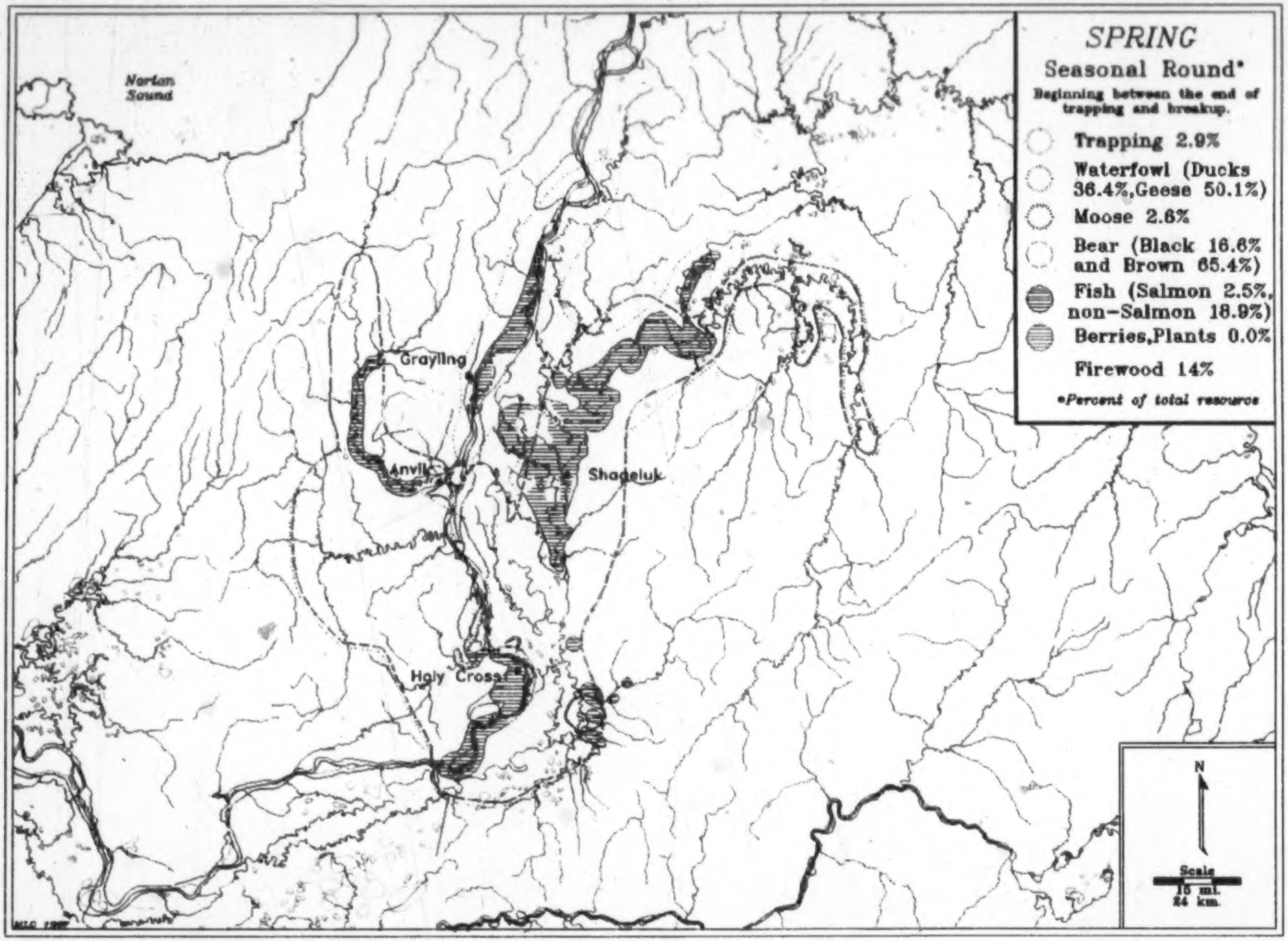
As the coming of spring is marked in part by the end of trapping, it should not be surprising that few fur bearers are harvested in the spring. A small fraction (2.9 percent) of the resources that are trapped are taken in the spring. During the study year, a few beaver were taken during springtime by residents of Anvik and Holy Cross; and rabbits were snared in spring by residents of Grayling, Anvik and Holy Cross.

While some communities reportedly harvest a small percentage of salmon (2.5 percent overall), in general salmon fishing is not a primary springtime activity. People in the area do fish for non-salmon species in spring, although it is not considered the important time for most of the non-salmon species. Residents of the four communities harvest pike, sheefish, and whitefish in spring; and Grayling and Anvik report fishing for char, grayling, and trout as well.

Table 48. Percent of Resources Harvested in Spring by Residents of Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

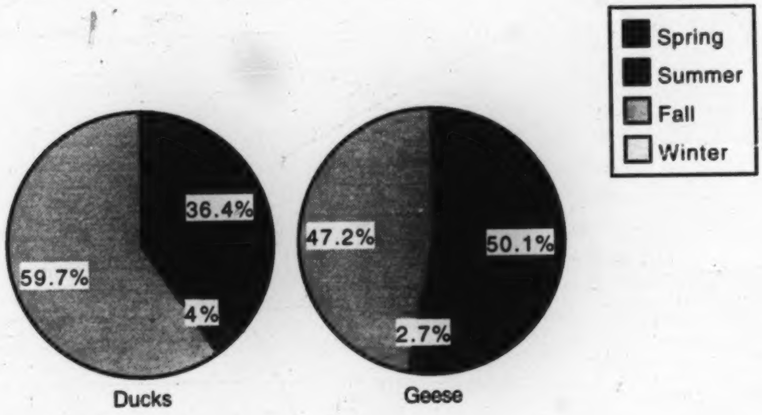
	Grayling	Anvik	Shageluk	Holy Cross
Salmon	3.7	1.1	0.0	2.1
Non-Salmon				
Char	40.0	20.8	n/a	n/a
Grayling	10.9	23.8	0.0	0.0
Pike	36.8	33.4	1.2	17.9
Sheefish	31.2	29.0	4.5	4.3
Trout	13.3	20.4	n/a	0.0
Whitefish	9.7	21.6	37.3	13.6
Large Land Mammals				
Black Bear	62.5	16.7	n/a	0.0
Brown Bear	100.0	50.0	n/a	n/a
Moose	1.5	2.9	0.0	3.8
Caribou	0.0	85.7	n/a	0.0
Small Land Mammals				
Beaver	0.0	5.1	0.0	1.5
Fox	0.0	0.0	0.0	0.0
Hare	6.3	13.4	0.0	9.8
Land Otter	0.0	0.0	0.0	0.0
Lynx	n/a	0.0	n/a	0.0
Marten	0.0	0.0	0.0	1.5
Ermine	0.0	0.0	n/a	0.0
Wolf	0.0	0.0	n/a	0.0
Birds				
Ducks	28.1	42.6	14.2	47.3
Geese	41.2	45.6	33.7	58.8
Swans	0.0	n/a	n/a	0.0
Upld. Game Birds	5.9	2.5	0.0	4.1
Plants and Berries				
Blueberries	0.0	0.0	0.0	0.0
Cranberries	0.0	0.0	0.0	0.0
Salmonberries	0.0	0.0	0.0	0.0
Greens	28.6	n/a	n/a	0.0
Firewood	14.9	14.3	13.6	12.1

Map 11.Resource Harvesting Area Utilized by Residents of Grayling, Anvik, Shageluk, and Holy Cross in Spring, 1990-1991.


Norton Sound
Grayling
Anvik
Shageluk
Holy Cross
SPRING
Seasonal Round*
Beginning between the end of trapping and breakup.
Trapping 2.9%
Waterfowl (Ducks 36.4%,Geese 50.1%)
Moose 2.6%
Bear (Black 16.6% and Brown 65.4%)
Fish (Salmon 2.5%, non-Salmon 18.9%)
Berries,Plants 0.0%
Firewood 14%
*Percent of total resource
N
Scale
15 mi.
24 km.

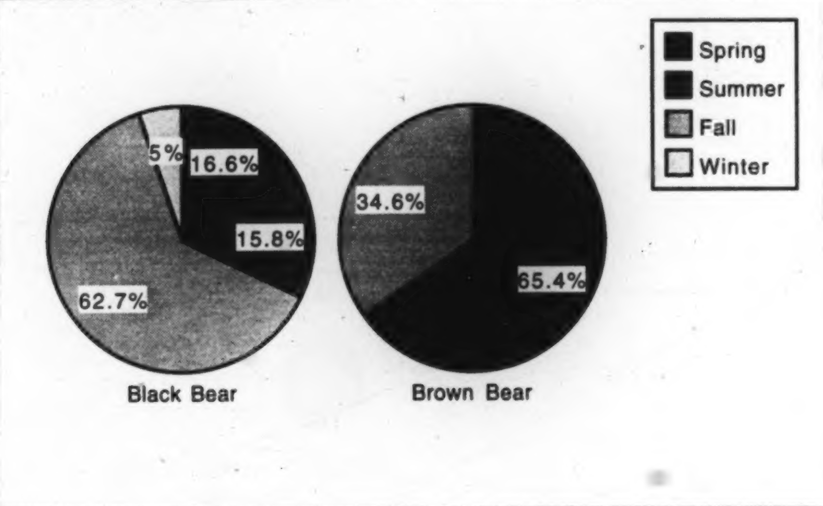
People consider duck and geese hunting as one of the more important spring activities. Many people indicated that it was not spring until they had tasted duck soup! Springtime ducks harvests account for from 14.2 percent of the total duck harvest in Shageluk to 47.3 percent of the total duck harvest in Holy Cross. Springtime geese harvests account for 33.7 percent of the total geese harvest in Shageluk, to 58.8 percent of the harvest in Holy Cross. As Figure 35 illustrates, overall spring duck and geese harvest account for 36.4 and 50.1 percent of the total waterfowl harvest, respectively. The fresh meat gained through the harvest of migratory waterfowl is considered to be a treat, and it is savored.

Figure 35. Percent of Ducks and Geese Harvested by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



Black and brown bear hunting also occurs in the spring. About 65 percent of the total reported brown bear harvest took place in the spring, as did about 17 percent of the black bear harvest (Figure 36). Both Grayling and Anvik harvest black and brown bear during the spring; 100 percent of the brown bear and 62.5 percent of the black bear taken by Grayling residents were harvested in springtime in 1991. Fifty percent of the brown bear and 16.7 percent of the black bear harvested by Anvik residents in the study year were harvested in the spring. Shageluk did not report having hunted brown or black bear, and Holy Cross only harvested black bear.

Figure 36. Percent of Black and Brown Bear Harvested by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



While three of the four communities report harvesting moose in spring, the springtime harvest represent less than four percent of the total harvest in the three communities. Interestingly, 85.7 percent of the caribou taken by Anvik residents were also harvested in the spring. Grayling and Holy Cross did not harvest caribou in spring.

In general, then, springtime is characterized as a time of transition. Trapping typically ends in spring, and only a small percentage of the total trapping harvest occurs in spring. People direct some effort at fishing for non-salmon species, and also at moose and caribou hunting. Considerable effort is directed at duck and goose hunting, with spring harvests accounting for half of the annual geese harvest and about 36 percent of the duck harvest. Finally, some wood is collected during spring (14 percent overall), although effort is less than all other seasons.

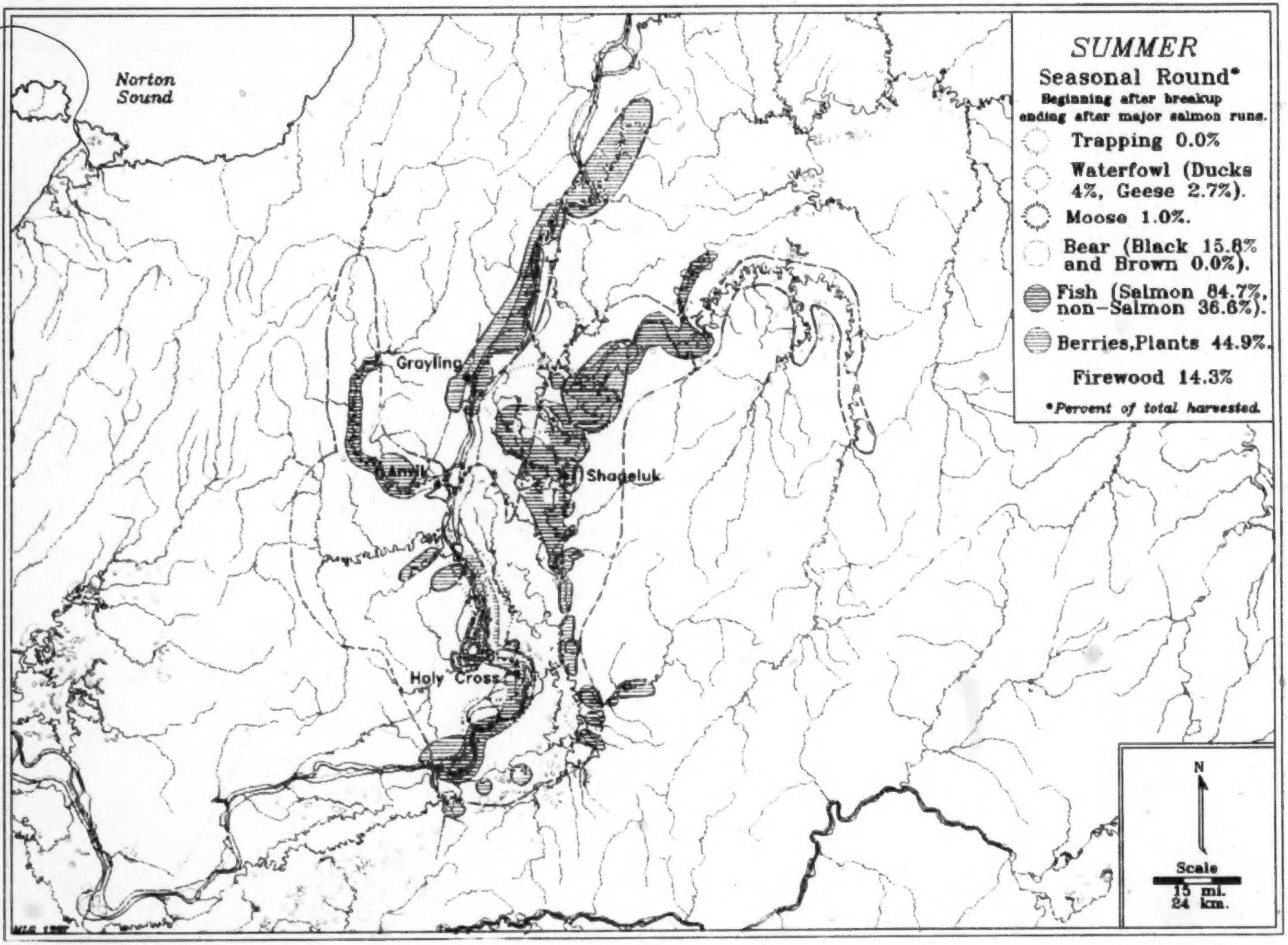
Summer

Table 49 provides the percent of resources harvested in summer by all four communities, and Map 12 ties the resource harvesting to the areas utilized. As might be expected, fishing is the primary summer activity.

Table 49. Percent of Resources Harvested in Summer by Residents of Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

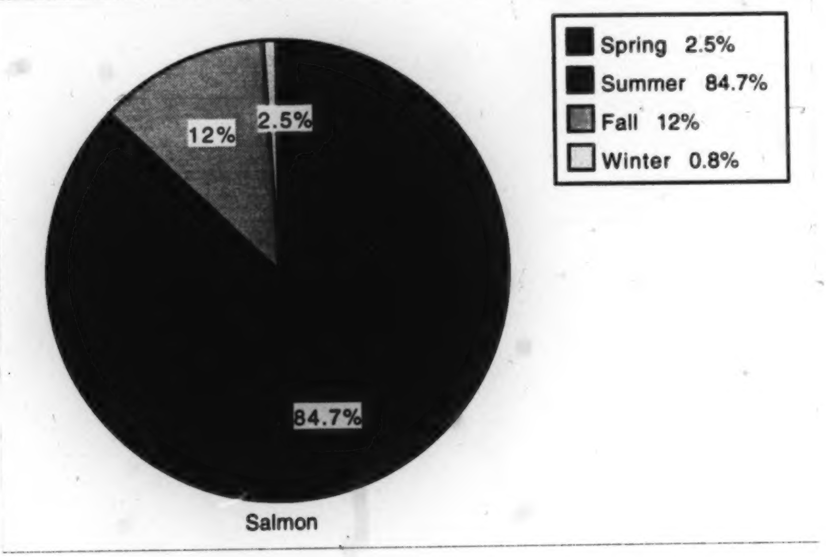
	Grayling	Anvik	Shageluk	Holy Cross
Salmon	83.9	83.8	90.7	83.5
Non-Salmon				
Char	13.3	31.3	n/a	n/a
Grayling	30.8	29.5	100.0	36.1
Pike	5.9	32.8	64.7	26.0
Sheefish	35.7	39.4	73.9	46.6
Trout	20.9	28.6	n/a	50.0
Whitefish	48.4	30.4	27.1	16.9
Large Land Mammals				
Black Bear	12.5	16.7	n/a	16.7
Brown Bear	0.0	0.0	n/a	n/a
Moose	0.0	2.9	6.3	0.0
Caribou	100.0	0.0	n/a	0.0
Small Land Mammals				
Beaver	0.0	0.0	0.0	0.0
Fox	0.0	0.0	0.0	0.0
Hare	0.0	0.0	0.0	0.0
Land Otter	0.0	0.0	0.0	0.0
Lynx	n/a	0.0	n/a	0.0
Marten	0.0	0.0	0.0	0.0
Ermine	0.0	0.0	n/a	0.0
Wolf	0.0	0.0	n/a	0.0
Birds				
Ducks	0.0	0.0	11.9	9.5
Geese	0.0	0.0	15.4	3.6
Swans	0.0	n/a	n/a	0.0
Upld. Game Birds	0.0	0.0	0.0	0.0
Plants and Berries				
Blueberries	52.4	0.0	82.5	29.1
Cranberries	54.0	0.0	90.0	37.3
Salmonberries	0.0	11.1	92.9	66.7
Greens	40.8	n/a	n/a	46.2
Firewood	16.6	10.2	11.3	15.0

Map 12. Resource Harvesting Area Utilized by Residents of Grayling, Anvik, Shageluk, and Holy Cross in Summer, 1990-1991.


Norton Sound
Grayling
Anvik
Shageluk
Holy Cross
SUMMER
Seasonal Round*
Beginning after breakup ending after major salmon runs.
Trapping 0.0%
Waterfowl (Ducks 4%, Geese 2.7%).
Moose 1.0%.
Bear (Black 15.8% and Brown 0.0%).
Fish (Salmon 84.7%, non-Salmon 36.6%).
Berries,Plants 44.9%.
Firewood 14.3%
*Percent of total harvested.
N
Scale
15 mi.
24 km.

As Figure 37 illustrates, the vast majority (84.7 percent) of salmon harvested are taken in the summer; this figure includes all four species of salmon harvested. The figure represents only the salmon taken for subsistence purposes.

Figure 37. Percent of Salmon Harvested for subsistence Purposes by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



A significant percentage (36.6 percent) of the non-salmon harvest also occurred in summer (Figure 38). Of the non-salmon species harvested, whitefish is the most important in terms of volume, accounting for almost half of the non-salmon fish harvested. Of that harvest, 33.8 percent is taken in the summer (Figure 39). Similarly, a large percentage of sheefish and pike are taken in the summer; summer sheefish harvests account for 42.7 percent of the total harvest and summer pike harvests account for 36.1 percent of the total pike harvest (Figure 40). Given that sheefish and pike together account for about half of the total non-salmon fish harvest, the effort directed at fishing for non-salmon species in summer is not insubstantial.

Figure 38. Percent of Non-Salmon Harvest Taken by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.

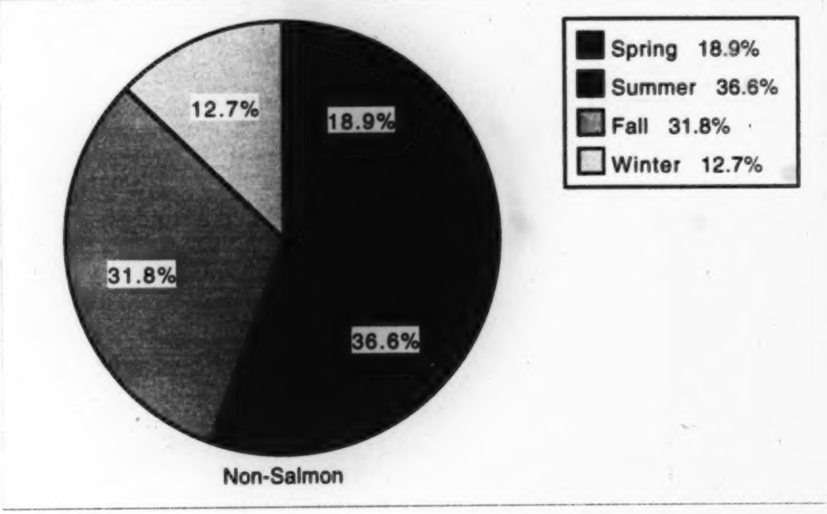


Figure 39. Percent of Whitefish Harvest Taken by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.

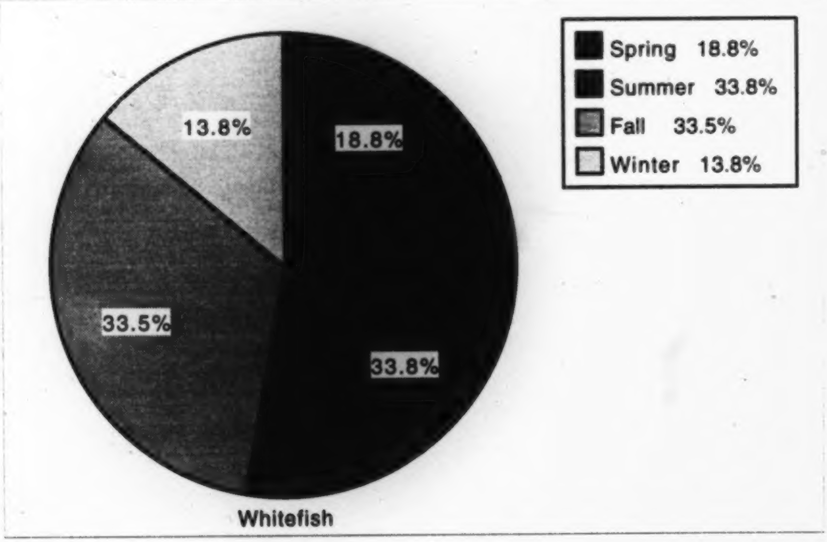
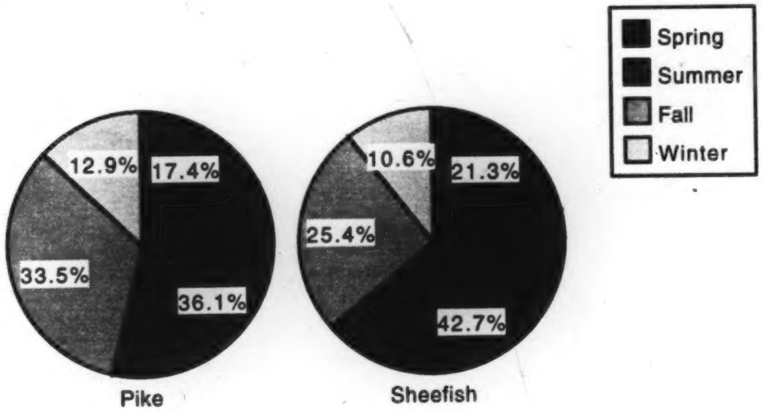
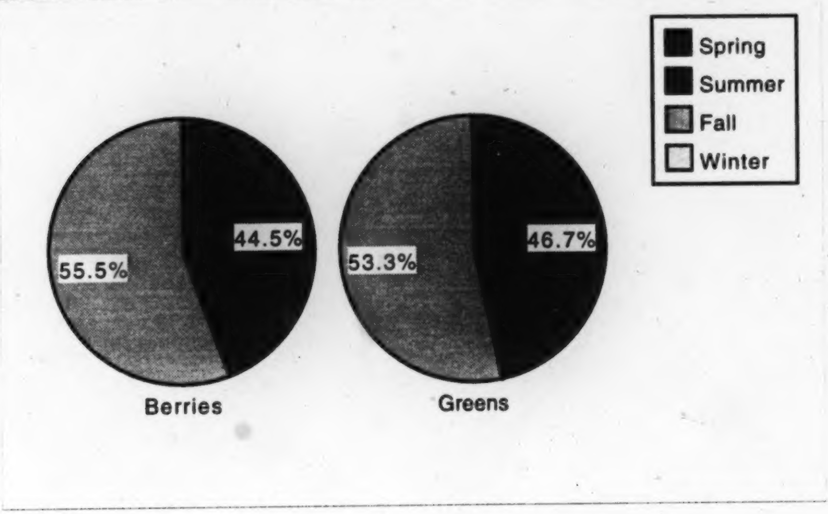


Figure 40. Percent of Pike and Sheefish Harvest Taken by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



In addition, limited hunting also occurs in summer; a small percent of the black bear harvest and all of the caribou taken by Grayling residents are harvested in the summer. In addition, Shageluk and Holy Cross harvest a small percentage of their total duck and geese harvest in the summer. Finally, about half of the berries and greens are gathered in the summer by three of the four communities; the exception was Anvik, in which all berries were reportedly collected in the fall (Figure 41).

Figure 41. Percent of Berries and Greens Harvest Taken by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



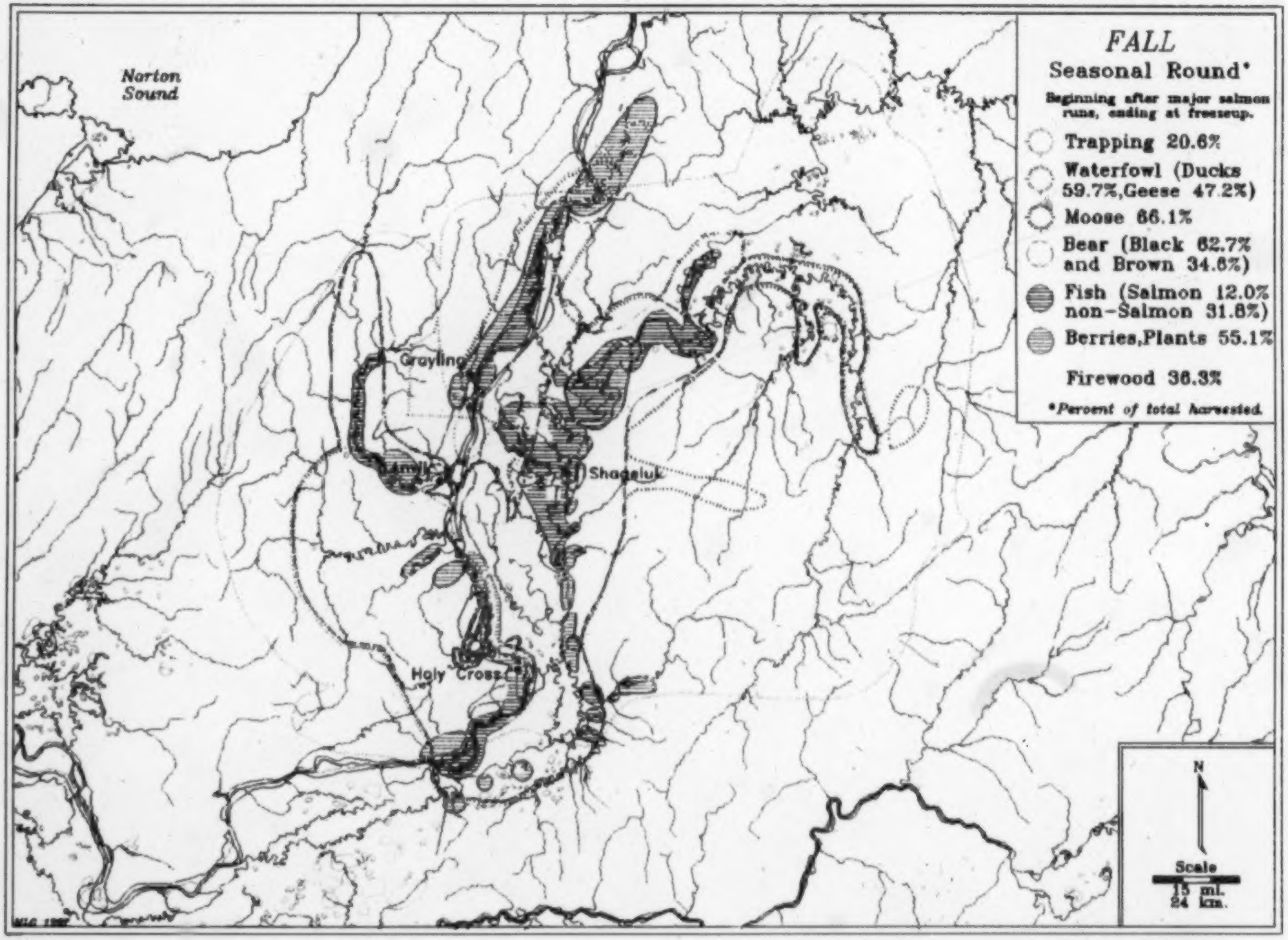
Fall

As noted previously, fall effort is directed at hunting moose, brown and black bear, and migratory waterfowl. Berries and greens are also harvested; and effort is directed at wood collection. Table 50 denotes the percent of resources harvested in the fall, and Map 13 illustrates the land utilized for fall resource harvesting activities by the communities.

Table 50. Percent of Resources Harvested in Fall by Residents of Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

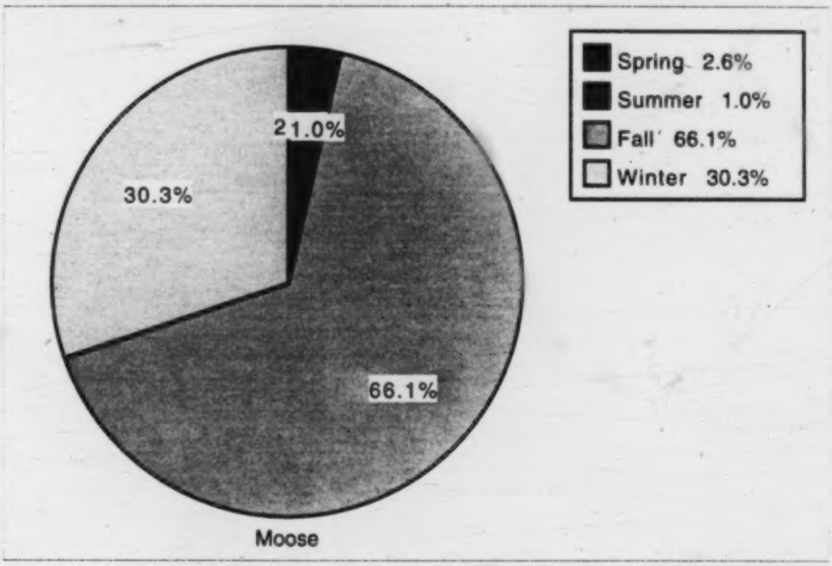
	Grayling	Anvik	Shageluk	Holy Cross
Salmon	12.3	15.1	9.3	11.1
Non-Salmon				
Char	46.7	6.3	n/a	n/a
Grayling	58.3	41.9	0.0	44.4
Pike	56.2	27.4	34.1	26.1
Sheefish	29.4	22.1	21.6	20.9
Trout	65.9	40.8	n/a	0.0
Whitefish	38.6	37.3	19.2	36.7
Large Land Mammals				
Black Bear	25.0	66.7	n/a	75.0
Brown Bear	0.0	50.0	n/a	n/a
Moose	57.6	65.7	81.3	69.2
Caribou	0.0	0.0	n/a	50.0
Small Land Mammals				
Beaver	14.2	41.8	0.0	1.5
Fox	27.3	53.6	25.0	6.3
Hare	42.1	48.2	0.0	41.1
Land Otter	30.0	75.0	100.0	100.0
Lynx	n/a	50.0	n/a	7.1
Marten	27.9	47.2	12.8	1.5
Ermine	28.6	45.5	n/a	0.0
Wolf	46.2	50.0	n/a	0.0
Birds				
Ducks	71.9	57.4	73.9	43.3
Geese	58.8	54.4	51.0	37.6
Swans	90.9	n/a	n/a	0.0
Upld. Game Birds	45.2	54.2	44.0	45.0
Plants and Berries				
Blueberries	47.6	100.0	17.5	70.9
Cranberries	46.0	100.0	10.0	62.7
Salmonberries	100.0	88.9	7.1	33.3
Greens	26.5	n/a	n/a	53.8
Firewood	34.4	38.3	29.9	43.6

Map 13. Resource Harvesting Area Utilized by Residents of Grayling, Anvik, Shageluk, and Holy Cross in Fall, 1990-1991.


Norton Sound
Grayling
Anvik
Shageluk
Holy Cross
FALL
Seasonal Round*
Beginning after major salmon runs, ending at freezeup.
Trapping 20.6%
Waterfowl (Ducks 59.7%,Geese 47.2%)
Moose 66.1%
Bear (Black 62.7% and Brown 34.6%)
Fish (Salmon 12.0% non-Salmon 31.6%)
Berries,Plants 55.1%
Firewood 36.3%
*Percent of total harvested
N
Scale
15 mi.
24 km.

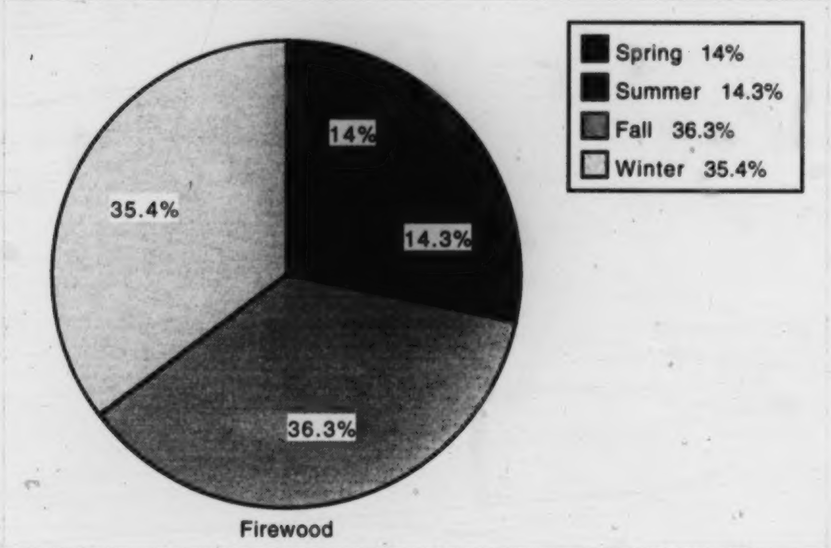
Overall, 66.1 percent of the moose are harvested in the fall. The percent of moose harvested in the fall varies by community, from 57.6 percent in Grayling to 81.3 percent in Shageluk (Figure 42). In addition to moose, brown and black bear are hunted in fall, with fall harvests accounting for 34.6 percent of the brown bear harvest and 62.7 percent of the total black bear harvest.

Figure 42. Percent of Moose Harvest Taken by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



In addition to land mammals, fall migratory bird harvests account for 59.7 percent of the total duck harvest and 47.2 percent of the total geese harvest. Finally, 36.3 percent of the total wood harvest occurs in the fall. While wood is gathered year round, fall and winter wood gathering is the most concentrated, together accounting for 71.7 percent of the wood harvest.

Figure 43. Percent of Wood Harvest Taken by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



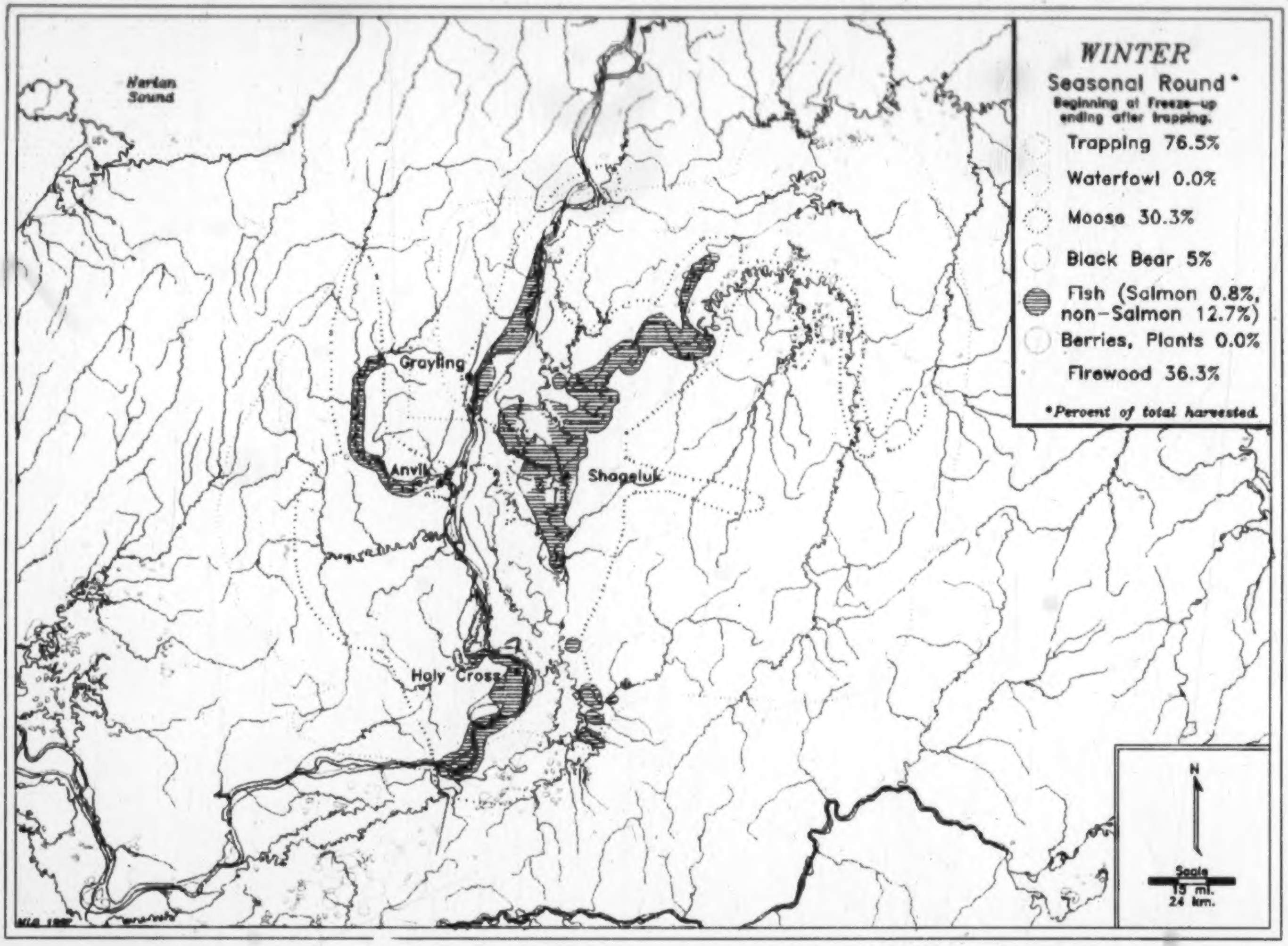
Winter

Moose hunting; fishing for non-salmon species, especially whitefish, pike, and sheefish; trapping; and wood gathering account for the majority of winter harvests. Table 51 provides the percent of resources harvest in winter by each of the four communities, and Map 14 illustrates the land utilized for the resource harvesting activities.

Table 51. Percent of Resources Harvested in Winter by Residents of Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991 (Source: Field Data).

	Grayling	Anvik	Shageluk	Holy Cross
Salmon	0.0	0.0	0.0	3.4
Non-Salmon				
Char	0.0	41.7	n/a	n/a
Grayling	0.0	4.8	0.0	19.4
Pike	1.1	6.4	0.0	30.1
Sheefish	3.8	9.5	0.0	28.3
Trout	0.0	10.2	n/a	50.0
Whitefish	3.3	10.8	16.4	32.8
Large Land Mammals				
Black Bear	0.0	0.0	n/a	8.3
Brown Bear	0.0	0.0	n/a	n/a
Moose	40.9	28.6	12.5	26.9
Caribou	0.0	14.3	n/a	50.0
Small Land Mammals				
Beaver	85.8	53.1	100.0	97.0
Fox	72.7	46.4	75.0	93.8
Hare	51.6	38.4	100.0	49.2
Land Otter	70.0	25.0	0.0	0.0
Lynx	n/a	50.0	n/a	92.9
Marten	72.1	52.8	87.2	97.0
Ermine	71.4	54.5	n/a	100.0
Wolf	53.8	50.0	n/a	100.0
Birds				
Ducks	0.0	0.0	0.0	0.0
Geese	0.0	0.0	0.0	0.0
Swans	9.1	n/a	n/a	100.0
Upld. Game Birds	48.8	43.3	56.0	50.8
Plants and Berries				
Blueberries	0.0	0.0	0.0	0.0
Cranberries	0.0	0.0	0.0	0.0
Salmonberries	0.0	0.0	0.0	0.0
Greens	4.1	n/a	n/a	0.0
Firewood	34.2	37.2	45.2	29.3

Map 14. Resource Harvesting Area Utilized by Residents of Grayling, Anvik, Shageluk, and Holy Cross in Winter, 1990-1991.


Norton Sound
WINTER
Seasonal Round*
Beginning at Freeze-up ending after trapping.
Trapping 76.5%
Waterfowl 0.0%
Moose 30.3%
Black Bear 5%
Fish (Salmon 0.8%, non-Salmon 12.7%)
Berries, Plants 0.0%
Firewood 36.3%
*Percent of total harvested.
Grayling
Anvik
Shageluk
Holy Cross
N
Scale
15 mi.
24 km.

As noted, 35.4 percent of the total wood harvest and almost one third (30.3 percent) of the moose harvest occurs in winter. Half of the caribou harvested by Holy Cross residents is/are harvested in winter, and 14.3 percent of the caribou harvested by Anvik residents is harvested in winter. A small portion (5 percent) of black bear and 12.7 percent of the total non-salmon harvest occur in winter. Further, 13.8 percent of the whitefish harvest, 12.9 percent of the pike harvest, and 10.6 percent of the sheefish harvest is taken in winter.

As mentioned, trapping is an important winter activity, accounting for over three fourths (76.5 percent) of the total fur bearer harvest (Figure 44). Over 90 percent of the marten and 82 percent of the beaver harvest occurs in winter (Figure 45). Similarly, 70 percent of the fox harvest and almost 50 percent of the hare harvest is taken in winter (Figure 46).

Figure 44. Percent of Fur bearer Harvest Taken by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.

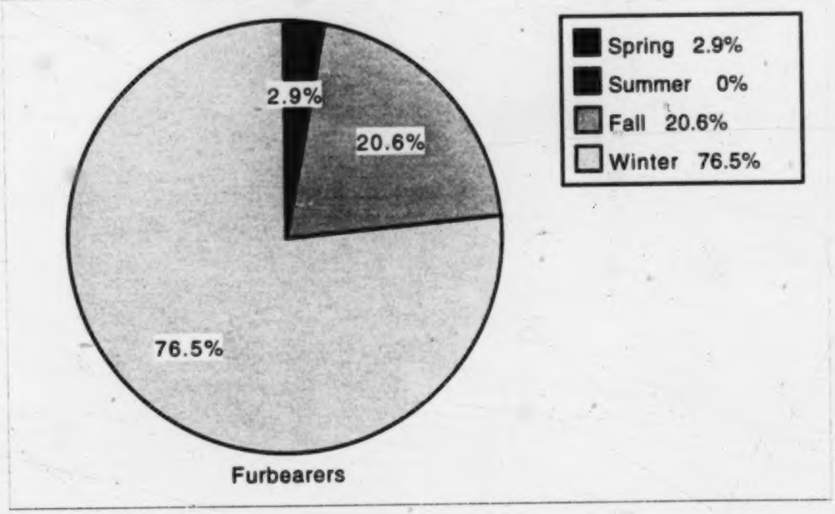


Figure 45. Percent of Beaver and Marten Harvest Taken by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.

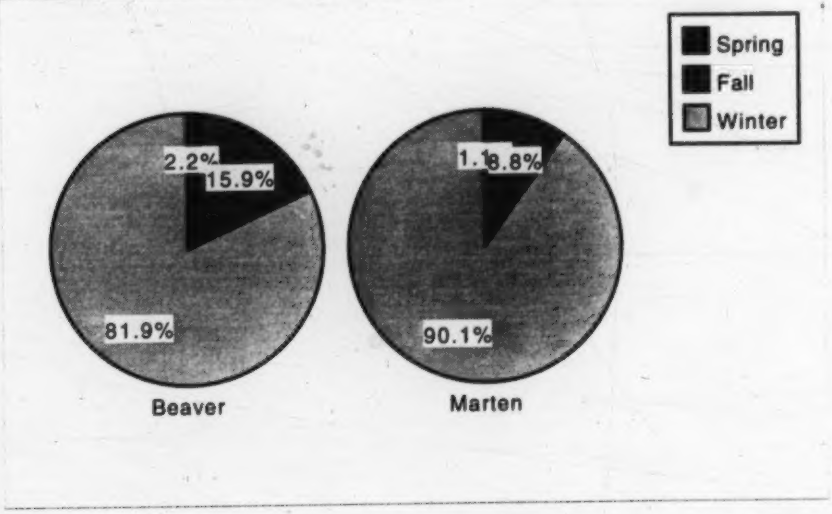
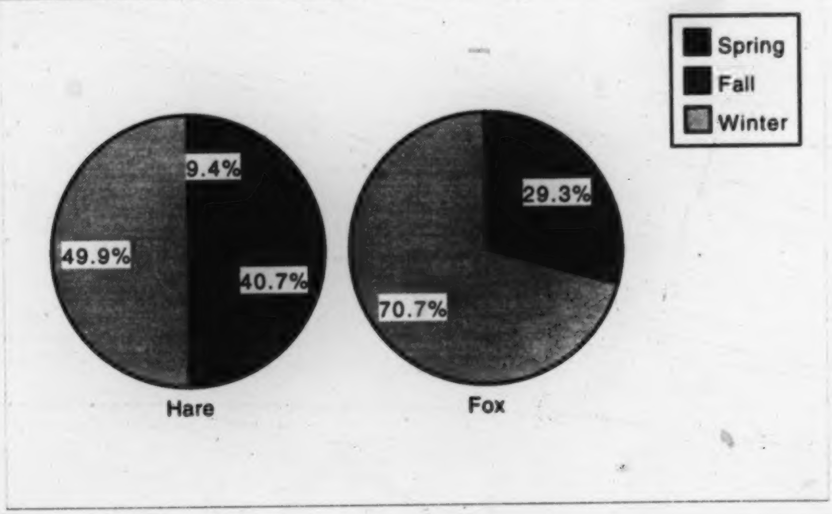


Figure 46. Percent of Hare and Fox Harvest Taken by Season, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.



Seasonal Costs of Subsistence Resource Harvesting

As indicated in the previous chapter, considerable expense, both in the form of capital investment and variable non-equipment costs, is associated with participation in hunting, fishing, trapping, and gathering. Given that resource use is highly seasonal, it should not be surprising that costs related to subsistence harvesting reflect this seasonal focus.

Figure 47 presents the inter-community variation in non-equipment expenditures on subsistence by season. The figure supports the data presented in Chapter Four, indicating that Shageluk spends the least and Anvik spends the most on subsistence-related expenses of the four villages. More importantly, the figure helps to illustrate community differences in seasonal foci. For example, in each of the four communities, fall expenditures are either the highest or second highest of the four seasons. This situation is consistent with a strong emphasis on fall hunting and gathering of berries. Similarly, in all four communities expenditures on springtime activities are the lowest; pointing to the relatively low harvests and low activity level (due to limited availability of resources) that is consonant with springtime. The emphasis of Anvik residents on trapping and their concomitant high harvest (compared with the other three communities) is reflected in the fact that winter expenditures in Anvik are the highest-- and trapping is the major winter activity. Anvik and Shageluk show similar patterns with regard to seasonal expenditure, and Grayling is similar except that winter expenditures are slightly lower than those for fall. Holy Cross expenditures vary somewhat from the other communities; like the other communities, fall expenditures are highest, and springtime expenses are lowest. In contrast to the other three communities, expenditures on summer activities are second highest, followed by winter. This situation is likely related to the relatively low participation in trapping (hence lower costs), and the relatively high participation in summer fishing (hence the higher summer costs). Other variables such as distances to particular areas, etc. also likely figure into seasonal expenditures.

Figure 47. Average Household Non-Equipment Subsistence Expenses by Season: Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.

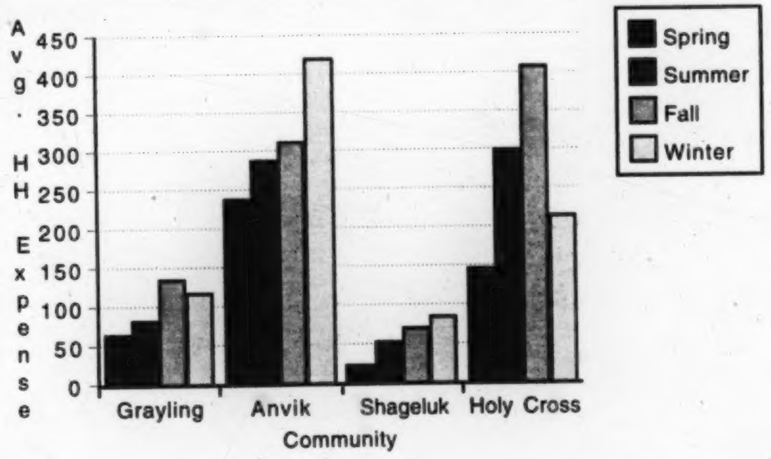


Figure 48 illustrates the seasonal average household expenditure on hunting, trapping, fishing and gathering. Several points are immediately clear. First, across all seasons the highest expenditures are on hunting, and the next highest are on fishing. Similarly, the lowest expenditures appear to be on trapping and gathering. Also interesting to note is the seasonal differences in expense for each activity--pointing to the season when most emphasis is placed on the particular activity. For example, expenditures are highest on fall hunting, a point consistent with fall harvest levels. Similarly, expenditures on summertime fishing is the highest--again, consistent with effort directed at and harvests resulting from summer fishing. The big season for trapping is winter, followed by fall, summer, and spring. The expenditures related to trapping in the latter two seasons are tied to snaring. Winter trapping harvests are the highest of all the seasons. Finally, gathering occurs primarily in the fall and winter-- as supported by both the figure and the gathering data.

Figure 48. Seasonal Average Household Non-Equipment Expenses for Hunting, Fishing, Trapping, and Gathering, Grayling, Anvik, Shageluk, and Holy Cross, 1990-1991.

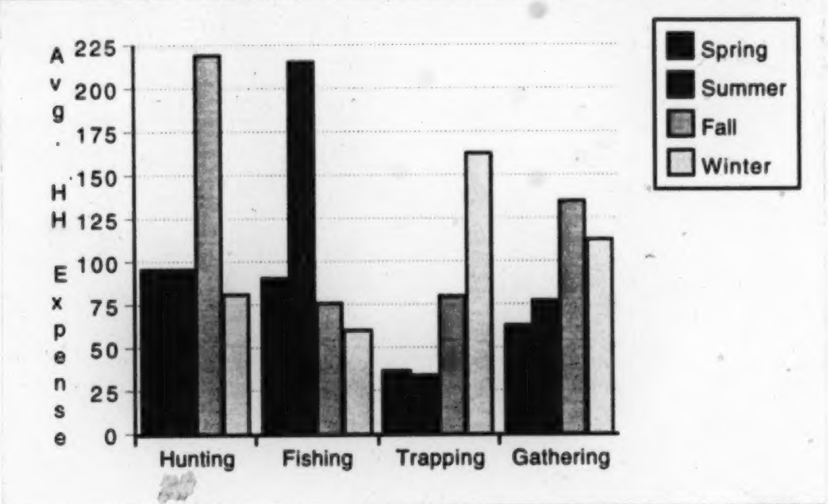
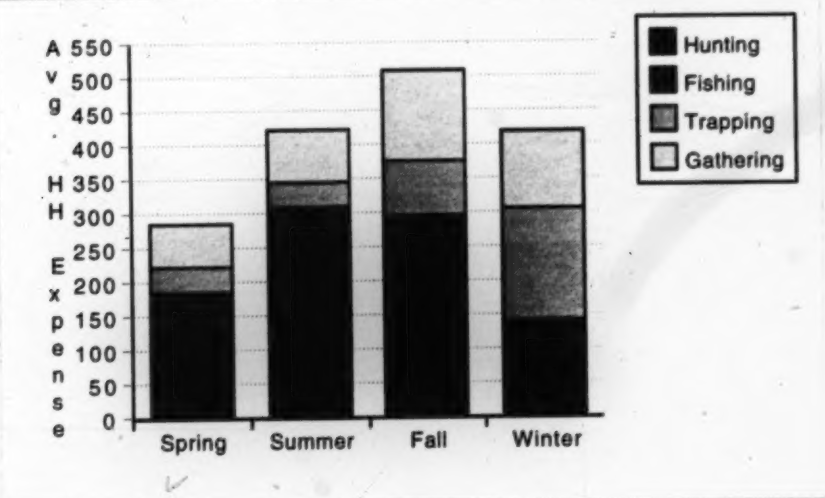


Figure 49 illustrates the composite average household expenditures by season on non-equipment subsistence expenses. As the figure illustrates, expenses associated with fall time activities are the highest, and springtime expenses are the lowest. Expenses associated with summer and winter activities are roughly comparable, although winter expenditures are slightly higher. Again, these patterns are consistent with resource harvesting patterns already discussed. They point to the relatively high variable costs associated with resource harvesting, and to the community variation in such expenditures.

Figure 49. Average Household Non-Equipment Expenses for Hunting, Fishing, Trapping, and Gathering by Season in Grayling, Anvik, Shageluk and Holy Cross, 1990-1991.



Summary and Conclusions

Reliance on a wide variety of fish and game resources is clearly an important component of self-definition for contemporary Deg hi'tan and Doy hi'tan. Perhaps not surprisingly, people spend a considerable amount of time, energy, and money on harvesting subsistence resources. Contemporary patterns of resource use mimic historical patterns in terms of seasonality, although contemporary patterns of resource use reflect the additional constraints of regulatory measures, which have altered traditional or historic patterns in some way.

Just as was the case historically, there is a strong seasonal component to contemporary resource use. Emic perceptions of the seasons and the annual cycle allow that the year begins in spring, typically prior to or at breakup. Resources are harvested throughout the year, their harvest depending in large part on their availability and access. Typically one of two activities are the focus of a particular season. For example, migratory waterfowl are an important focus of spring, while fishing, especially salmon, is an important focus of summer. Moose and migratory waterfowl harvesting as well as berry gathering could be said to be the major fall activities, and trapping is a focus of many households in the winter. Fishing for non-salmon species is done throughout the year, as is wood collecting. Birds other than ducks and geese (e.g., ptarmigan and grouse) are also harvested throughout the year. Black bear are also typically harvested throughout the year, although the emphasis on harvesting is in fall. In contrast, brown bear are harvested only in spring and fall, with the former being the most important season for brown bear and the latter for black bear.

Emphasis on particular activities by season is reflected in seasonal average non-equipment household expenditures. The highest seasonal expenditure occurs during fall hunting, when the majority of meat taken during the year is typically harvested. Similarly, summer fishing received the second highest seasonal expenditure; summer fishing brings in the majority of annually harvested fish (salmon and non-salmon). Some interesting intra-community variation occurs in the overall patterns. For example, Anvik households spend more on trapping than any of the other three communities. This situation is consistent with historic patterns of resource use. In addition, Holy Cross households spend less on summer activities than households in the other three communities. This may be tied to the participation of Holy Cross residents in a different commercial fishery (i.e., they do not have a roe fishery in Holy Cross; and are limited to selling whole fish); and to the fact that commercial permits in Holy Cross are predominantly (90 percent) fishwheel permits, which affords a slightly different harvest.

For the Deg hi'tan and Doy hi'tan, the relationship between the resources and the lands and waters utilized at any given point in time is characterized by variable needs, environmental influences, and transportation methods, in addition to individual ability to access/harvest resources, and contemporary settlement patterns. In addition, the influence of regulations on contemporary resource use cannot be underestimated. Contemporary patterns of wild resource use, while rooted in historical antecedents, are a product of myriad variables.

CHAPTER SEVEN:
A Comparison of Western and Emic Perspectives on Resource Management and Cash

Introduction

The previous two chapters have illustrated the levels of harvest and consumption of wild fish and game resources by the residents of Grayling, Anvik, Shageluk, and Holy Cross. It has been illustrated also that considerable time, energy, and resources are invested in harvesting and processing wild fish and game resources. In addition, we have seen how cash and equipment are, as with fish and game resources, typically utilized seasonally; and to the best advantage of the user and, by association, the community.

This chapter begins with a discussion of the different perspectives on wild resource management held by local people and western managers, and of the fundamental differences between the two perspectives. Following this, I discuss some of the issues local people face in the context of state or federal, or external, management. How resources are managed and perceptions of management are inextricably tied to ideas about resources. Specifically, what comprises a resource (be it animal or otherwise) is a critical component of how that resource is managed. As we have seen, according to the local perspective, resources derive their value in part through their availability or lack thereof, and their overall contribution to the social and economic matrix of the community, among other things. This view is not necessarily the case in western culture. In light of this, and following the discussion on resource management perspectives, I turn to a discussion of western and emic perspectives on resources-- again, in an effort to consider the tremendous differences in the two perspectives, and to reveal the fundamental underlying differences in behavior with regard to resources and their treatment, utilization, and place within the daily lives of the users.

As noted in Chapter One, the emic perspective is derived from my understanding of Deg hi'tan and Doy hi'tan feelings, beliefs, and activities, as described by the people of Grayling, Anvik, Shageluk, and Holy Cross. This perspective is discussed in comparison to the western, techno-scientific perspective which typically dominates in formal management;[120] and can be characterized as that view held largely by the non-Native, non-rural population.[121] While referring in this context to Alaska, numerous examples indicate that this paradigm is not isolated to Alaska; and may, in fact, be endemic to the north (Asch 1986; Berkes, et al. 1994; Dick 1996; Feit 1986; Freeman 1985, 1989, 1995, 1996; Huntington 1992; Lynge 1992; Usher 1984, 1986). To illustrate, Freeman (1985: 265) provides the following observation of the Canadian north:

> Systems of game management, based upon different bodies of knowledge and beliefs co-exist in the Canadian north at this time. The more recent system is derived from a conventional biological-science based understanding of animal population behaviour and is heavily quantitative in orientation. The older, Native system, though also empirically based, relies on a different set of assumptions and is behaviour-based.

Before progressing, one more point with regard to resources and their management needs to be made; and that concerns the political nature of resources and resource management; that is, the notion of just what constitutes a resource is both culturally and politically determined. I would argue that in Alaska especially, politics, far more than biology, determines the nature of resource management; and, further, just what defines or comprises a resource. Along these lines, Usher (1984) argues that one cannot understand resource management policies or systems without reference to the system of property rights. Given that property rights are the partial foundation of political systems, Usher makes a crucial point; and in so doing lends support to the idea that management systems and, to a certain extent, the resources they purportedly manage, cannot be understood outside of the political context within which they exist.

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[120] In reference to the western scientific perspective, Freeman (1986: 29-30)provides the following warning:

> ... [O]ne could say that there is no standard culture (certainly not our North American variety) by which others are to be judged and deemed better or worse. This is so obvious that I apologize for even making the statement, but I do so because it is apparently necessary that scientists in particular remember that their scientific culture is not shared by everyone, and that their own scientific culture is very recent, very much a developing field in terms of human intellectual understanding. David Suzuki .... has referred more than once to the arrogance of scientists.... an arrogance born out of a culturocentric (indeed a eurocentric) view of the world. In this view, not only are those who do not subscribe to the scientist's definition of the problem held to be somehow lacking in their understanding of reality, but even when the scientists have few solid facts to support their assertions, they still expect non-scientists to accept their opinions as if they were statements of fact.

[121] This segment of the population is quite familiar to me through my fourteen year residency in Fairbanks, Alaska, and my observation of and involvement in fish and game issues for the past thirteen years.

Asch (1986, 1989) clearly illustrates that resources cannot be understood outside of their political context in a discussion of definitions of 'wildlife' in Dene Aboriginal rights claims. He argues that Aboriginal and western ideas of wildlife are widely divergent, and western definitions of wildlife in no way "... accurately reflect Dene concepts and interests. ..." (Asch 1989: 18). By placing wildlife as the opposite of domesticate, Asch argues that the western definition of wildlife is limited to that which is un-ownable (at least prior to its capture). As Dene in fact "... provide for proprietary interest in animals even prior to their capture" (Asch 1989: 18), in the context of Aboriginal rights claims, Dene ideas of wildlife are clearly misrepresented and significantly undervalued. Perhaps this misrepresentation is a result of ignorance and nothing more. Alternatively, as Niedermeier (1981: 16) suggests in the context of land claims, it is intentional; a situation whereby people purposefully "... refused to validate, and indeed provided only vague language for, interests they perceived as contrary to their own..." Given the political nature of wild resource management, one cannot wholeheartedly dismiss Niedermeier's explanation, in spite of its insidious implications. Suffice it to say that resources and resource management systems cannot be fully understood outside of their political context. The following discussion is thus situated in some of the political dialogue that is ongoing in the North.

Differing Perspectives on Fish and Game Management

From a western perspective, the goal of fish and game management is to ensure "proper" human uses while maintaining fish and game populations to ensure continued use.[122] Often referred to as "maximum" or "optimum" sustainable yield, the goal (at least theoretically) of western management is to provide for maximum harvest while providing for healthy stocks-- a tricky balance at best! A fundamental assumption is that sufficient information is held by the managers to effect this balance. Unfortunately, such is often not the case; for, as is noted by Freeman (1985: 267), "... In fact, scientists have only fragmentary biological information for nearly all arctic species that they propose to scientifically manage. ..." . To a certain extent then, western management is based on theoretical ideals, the application of which does not always work to the advantage of the targeted fish or game species: a fact only too well supported by the history of fish and game management in the state of Alaska.[123]

Within this paradigm, "proper" human uses more often than not consist of taking game for recreation or sport.[124] While in most cases meat is efficiently harvested, in some cases it is not.[125] What is considered usable portions of the carcass varies: rarely are the organs or parts of the head considered to be edible. In general, the protein resulting from harvests is for supplementary purposes. It provides a source of meat, which only marginally supplements store-bought meat and poultry. Finally, harvests are most commonly by and for individuals rather than benefiting a defined community or group. Production and consumption occurs on an individual, not community level. Certainly meat is often distributed to friends and family, but there is neither an underlying cultural patterning nor social imperatives guiding this redistribution.

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[122] State governmental funding of fish and game activities and programs seems to ensure that much policy will be weighted in favor of urban users, since the majority of representatives must, at least theoretically, support their constituency.

[123] While numerous examples point to the inefficacy of formal western management in the State, a sterling example of the egregiousness of management paradigms include the 1993 fall chum run on the Yukon River and its tributaries; the fall chum run was a fraction of its predicted strength and subsistence fishing remained closed for the entire season. Another example lies in the management of almost all marine mammal populations in the state; so little is known about most of the populations that management is based primarily on assumptions. In spite of this, Native knowledge is dismissed as anecdotal.

[124] Under Alaska State law, three categories exist for the taking of fish and game: commercial, personal or sport use, and subsistence. From a political perspective, the controlling interest in fisheries management is held by the commercial fisheries. In terms of game, the controlling interest is held by sports hunters.

[125] Under Alaska state law, hunters not salvaging the meat are guilty of wanton waste, a crime typically punishable by fines and forfeiture of hunting equipment. However, what constitutes wanton waste is not entirely clear. Many sport hunters will take the front and hind quarters, loins, and the antlers; and leave everything else behind. In the context of rural Alaska, this is wanton waste.

From an emic perspective, the goal of management is continued harvest for the community (which includes future generations). Embedded in the idea of continued harvest is a complex collection of behavioral, spiritual, and community guidelines.[126] These so-called guidelines, comprised of a complex collection of rules and behaviors which dictate the harvesting, butchering, use, and disposal of remains of the animals, are largely unspoken but generally understood; and have to do with appropriate treatment of animals (both prior and subsequent to harvest).[127] Often, the rationale for these behaviors is not articulated outside of the act; it is carried out without question. While not automatically ensuring continued harvest, following these culturally prescribed guidelines helps to eliminate potential obstacles to continued harvest. For example, an important ideal of appropriate behavior has to do with using as much of the animal as possible, and not wasting anything. All of the flesh is consumed, including the head (lower jaw, lips, and the nose),[128] most body parts and the organs, such as the heart, liver, kidneys, tongue, and brain.[129] Another parameter dictating appropriate use of fish and game is that of sharing. According to the emic perspective, sharing harvests is a cultural mandate.

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[126] Freeman (1985: 274) notes that ".... Social mechanisms controlling the interaction of populations of foragers and food species are a constant feature of these Indigenous management regimes...."

[127] The idea underlying appropriate treatment is that at one level it is the animals, not the people, that control the success of the hunt. The animals must be treated with proper respect in order to keep coming back or "offering themselves up" to be harvested. Human users of the resources have to fulfill certain obligation towards the animals to ensure a productive hunt. Often referred to as an "environmental ethic," the human obligations towards animals, intertwined with social obligations, is an integral part of the local management system (Berkes 1981a; Berkes 1981b; Feit 1983; Feit 1986; Freeman 1981; Freeman 1986; Freeman and Carbyn 1988; Nelson 1983; Nelson, et al. 1982; Usher 1981; Usher 1982; Usher 1986; Wheeler 1988).

[128] Moose nose and moosehead soup, a mixture of fat, muscle, lips, and assorted tissue, are two of many local delicacies featuring moose.

[129] Nelson (1983) provides an excellent account of the parts of moose consumed by Koyukon Athabascans.

Production and consumption of harvests typically occur along familial, and often community, lines.

A fundamental difference underlying the respective management goals has to do with the role and place of the individual in the context of the community. On the one hand, the goal of management from a western perspective is to ensure proper human uses, which are generally thought of in terms of the individual and not the community; that is, individual use takes precedence over community or collective, use. If an individual defies or ignores management parameters, the action has little or no bearing on other individual uses of fish and game. The larger community is therefore not affected by an individual's actions. In contrast, from the emic perspective the goal of management is to ensure appropriate behavior of individuals; and in so doing ensure continued community harvest and thus community viability. Appropriate behavior is circumscribed and defined by a complex set of behavioral expectations and cultural mandates, as mentioned above. Because individual actions directly affect the community, these desired behaviors and cultural mandates are usually informally enforced by the community as a whole. In short, individual actions occur within the social, political, and economic fabric of the community--it is therefore in the community's best interest to ensure appropriate individual action (cf. Feit 1991; Nelson 1973, 1983; Ridington 1988, 1990)

Methods of western fish and game management occur largely through the imposition of bag limits, seasons, periods, geographic boundaries; and certain requirements, such as sealing of animal skulls, returning of sex organs of moose after the harvest to Alaska Department of Fish and Game, etc. Law enforcement exists as a threat to coerce compliance with regulations. As evidenced by recent developments, manipulation of animal populations through sterilization of predator populations is also considered a viable management tool.[130] Numerous regulatory measures fail to reflect local reality, and therefore make local compliance difficult if not impossible. The examples of regulations surrounding moose and bear harvests discussed later help illustrate this point.

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[130] For example, a wolf sterilization program has been recently approved in Alaska. The goal of the program is to support sports hunting demand in certain parts of the state by decreasing the predator (wolf) population; and in so doing, increase the caribou and moose populations.

As described above, emic management methods consist of ensuring appropriate behaviors, proper treatment of harvested game, along with observations of game population cycles, etc. Because the community depends on continued harvests, it is incumbent upon the community to ensure individual compliance with cultural mandates. While these customary mechanisms of control are sometimes violated, such transgressions are the exception and not the rule. Instead, most resource harvesters are generally clear about their obligations towards the animals; and implicitly, towards other members of the community.

The dominant rationale for management, from the western perspective, is the belief that it is necessary to impose restrictions on hunting and fishing to quell the human inclination to overharvest. Variously labeled as the "global predicament" (Orr and Soroos 1979; Segerstedt and Nilsson 1974) or the "tragedy of the commons" (Hardin 1968), this rationale for management is based on the idea that the inevitable outcome of increasing human population and utilization of land and resources is over-exploitation. Freeman (1989: 93) explains:

> The orthodox and widely accepted position taken by manager-biologists is that man (in the arctic and subarctic) and the renewable resources upon which he depends exist in a modified predator-prey relationship. This essentially biological model proposes that in historic times the human predator was kept in balance with food supply in such Malthusian checks as starvation, disease, and density-dependent suppression of natural fertility. The primitive technology available in pre-modern times precluded the possibility of over-harvesting. From this mostly traditional situation, subsequent contact with modern society caused serious ecological imbalances to occur. For example, new imported technology made killing animals much easier; medical and welfare services resulted in human population explosion; and population density increased dramatically as people exchanged their nomadic and traditional ways for sedentary living in permanent settlements.
>
> This transformation, the argument goes, occurring over the past one or two generations in northern Canada, has resulted in the complete loss of natural checks on overharvesting and the consequent need for externally imposed regulations to protect wildlife and fish stocks from the uncontrolled and excessive harvesting that will be the inevitable result.... This particular scientific orthodoxy necessarily denies the existence of any traditional

> resource management systems, citing as evidence the notion of "Pleistocene Overkill" which is alleged to have occurred when early hunters first came into contact with large mammal species following the ice ages. If such views reflected reality, we would expect wildlife to be scarce over much of the Canadian north where the native population has doubled over the past twenty years; where few state-imposed harvest quotas are in place or strictly enforced; and where the wildlife harvesting technology has undergone profound improvement.
>
> The actual situation in the north, however, bears little resemblance to the outcome predicted by this particular model.

There is a need, managers argue, to impose regulations that, practically speaking, will stem the inevitable human tide and its accompanying greed. Otherwise, individual greed will dominate; and thus usher in the demise of the animal population. Of course, such rationale is clearly self-serving, since by definition only those individuals 'trained' in resource management can effectively deal with the situation. Ironically, as Freeman notes, the predicted demise has not occurred. In spite of that, this model continues to inform western perspectives on management throughout the North, as many researchers have noted (Berkes 1981b, 1985, 1986; Feit 1994, 1988; Freeman and Carbyn 1988; Usher 1993; Wheeler 1988).

In contrast, the rationale for management from the emic perspective again goes back to the community and its long term viability, and is largely derived from cultural and historic imperatives. The frequently heard statement that "we've always done it this way" reflects the management rationale well. In effect, people believe that their continued responsible and proper treatment of resources is the key to both resource and community viability.

The means by which decisions are made, indeed the so-called operative paradigm within which western management occurs, is biological and, as noted previously, political; that is, information considered valuable in determining management decisions is derived, at least theoretically, from biological science. Ideally quantifiable,[131] information used to

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[131] Along these lines Freeman (1985: 266) makes the following observation:

> There are several beliefs that wildlife scientists/managers have come to hold, that support their conviction that the scientific approach to game management is superior to systems espoused by other groups of people. These include the conviction that quantification of data is necessary and a belief that Indigenous societies have neither the knowledge nor the

make management decisions includes data produced through harvest reports, population counts, issuance of permits, and limited short-term population and harvest monitoring. In many (most) cases all of the information needed to make informed decisions is not held by biologists,[132] and decisions are often a matter of opinion -- opinion commonly informed by politics. While theoretically based on scientific methods and therefore replicable, many of these "scientific reports" are functionally anecdotal; a common criticism of local knowledge, although that irony seems to be lost on many federal and state managers.

While there is undoubtedly a biological basis to management from the emic peespective, management encompasses far more than biological information. Freeman (1985: 275) describes the emic system as follows:

> In reality both Native systems and western science rest on the same foundation -- namely empirical evidence. Both systems place value on the systemic accumulation of detailed observations and the abstraction of norms from disparate data sets. At this point, however, the two systems diverge. The Native system assesses deviations from the norm in a qualitative sense: e.g. animals become fewer, or fatter, or more excited, there are fewer calves in the herd, more injured bulls, more barren cows, etc. All such information provides important evidence of trends taking place in the status of the population. If an individual hunter observes a particular constellation of events that are totally unfamiliar, or the significance of which is unclear, there are other hunters with experience of other times and places who can usually provide assistance in interpreting the evidence. The sum total of the communities' empirically-based knowledge is awesome in breadth and detail (see e.g. Freeman 1979), and often stands in marked contrast to the attenuated data available from scientific studies of the same populations.

Merculieff (1991: 1) describes the emic system as cyclical in orientation, relying on and encompassing a variety of factors:

> Native science does not divide the environment into separate components and disparate events. Nor does it use numerical data systems for gathering information. Rather, it relies upon information gathered by visual and

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institutional means of managing natural resources. .... With regard to the question of Indigenous/pre-modern systems of game management, biologists ... assert the superiority of their system over others...

[132] Freeman (1985: 267) also notes that:

> .... The goal in managing renewable resource populations according to science-based systems is to ascertain the harvest level that can be sustained without damage to the stock. In the case of already depleted stocks, the goal is often to allow recovery to levels that are believed to have existed before overharvesting occurred.... *In fact, scientists have only fragmentary information for nearly all arctic species that they propose to scientifically manage* (emphasis added).

> physical observation of numerous natural events. This information is analyzed in the context of historical knowledge and the experience of many others through many generations. Native science sees the interdependence of all life, the connections and constantly changing interactions...

Local management decisions occur in the context of many years of knowledge and observation on the animal populations and environment upon which people depend. Variously referred to as local knowledge, traditional ecological knowledge (TEK),[133] Native science, or local ways of knowing, this knowledge is based on hundreds of years of accumulated, ancestral experience, as well as individual observation; and it serves as an invaluable backdrop upon which resource use occurs. Importantly, this use is based on a depth of knowledge created by and for the community. In turn, the community ensures appropriate use of resources in order to ensure community viability.

The motivation for management according to the western perspective is tied directly to management goals; that is, to ensure stable or increased animal populations.[134] Functionally, the motivation for management is to ensure sufficient animal populations for human demand. The primary audience for the management system is recreational and sport hunters and fishers.[135] Not surprisingly, this particular "user group" is likely the most influential when it comes to fish and game management in the state. Sport hunters tend to have a majority influence on the State Board of Game, and they possess the political and financial resources to influence fish and game management.

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[133] An expanding body of literature on traditional knowledge (Dahl 1989; Freeman and Carbyn 1988; Johannes 1989; Jones and Konner 1989; Kawagley 1993; Lewis 1985, 1989; Merculieff 1991; 1994;, n.d.; Wheeler 1988) addresses this growing field of study.

[134] Under the Alaska State Constitution, the goal for management of fish and game species is optimum sustainable yield. This goal exists as a mandate, though whether or not it drives fish and game management in the state can be questioned, as politics plays an increasingly greater role in fish and game management, and optimum sustainable yield is becoming a political agenda rather than a biological idea (Huntington 1992; Kancewick and Smith 1991).

[135] As noted, under Alaska State law, use of fish and game is classified as commercial, sports, and subsistence. The latter category is and has been the focus of considerable controversy for many reasons, likely the most important of which is to what exactly it refers (see chapter 1, footnotes 26, 27 and 28 for further information). It is interesting to note that in the past 15 years the rhetoric on the part of sportshunters has changed considerably. Early on, sportshunters argued against special allowances for subsistence; now that such an allowance (such as it is) exists in the state, sporthunters argue that they are, in fact, subsistence users.

In contrast, the motivation for management from the emic perspective is essentially cultural, community, and family viability; and the audience for this implicit management paradigm is limited to local people, who typically lack the financial and political resource to affect much in the way of western or techno-scientific management policy.

Given these widely divergent perspectives, it should not be surprising that local people perceive state and federal management systems as external; and, in a sense, foreign to the system. At the same time, local "management practices" are seen as internal to the system (by the local practitioners-- they are overlooked or ignored by western managers). Contemporary resource use by local people is commonly a mix of these two systems.

To illustrate this point, consider the common practice of the imposition by State and federal managers of bag limits and open (and closed) seasons for fish and game species. These are not game management, but rather people management. Most simply, these regulations determine when and where people may procure the resources. When the resource is threatened, the rules are changed; or nature is manipulated to accommodate for the resource fluctuation. While these regulations are undoubtedly imposed with the biological health of the species in mind, it is apparent that the regulations operate under the assumption that the people participating in the harvest of the resources do not have the expertise or the knowledge to determine the proper quotas in terms of sex, age, or the proper times to hunt particular species. This ignorance may be true for many non-local or sports hunters; but it is not the case for most local, resident hunters.

To give an example from the study year, consider state and federal management of moose. As discussed in Chapter Five, moose is the largest and most frequently harvested of the large mammals in the communities of Grayling, Anvik, Shageluk, and Holy Cross. At the same time, moose is one of the most sought-after trophy animals for sport hunters; and the Innoko National Wildlife Refuge is a popular area for sports hunters. In 1991, the "season" for moose began on September 5 and ran through September 25 for the residents of unit 21E. This ruling allowed 20 days for the procurement of one moose for each of the resident hunters *holding the proper license and tags*. During the same period, non-resident hunters were allowed to harvest animals within GMU 21E. While there is little doubt that bull moose are prime during this time, with stores of fat accumulated during the summer months, this is one of only two times (30 days in all) to hunt moose legally. To disallow hunting at other times has no reasonable rationale within the local regulatory system. Information from the area indicates an in-depth local system for determining the proper age and sex of moose to harvest at various times throughout the years.[136] This information has been gathered for other resources and areas of Alaska and Canada (Brody 1982; Feit 1986; Nelson 1983; Nelson, et al. 1982; Riewe and Gamble 1988). Hunters in the four communities effectively cull moose populations, with non-pregnant, non-breeding, too young or too old individuals commonly taken rather than healthy breeding stock. Naturally, there are exceptions to this rule, exceptions which are often tied to need. The detail of such local regulatory systems is unique; and the preferred, harvestable age/gender set can change depending on immediate seasonal conditions such as snow cover, herd movement, or composition.

In addition, moose are acquired as needed when funeral or memorial potlatches are to be held. While it is currently legal to acquire moose for funeral potlatch, it is not currently legal to acquire moose for memorial potlatch (outside of the moose hunting season). Nonetheless, moose are hunted for both funeral and memorial potlatches. Hunters who contribute their efforts in these instances place more value on the cultural imperatives than on the external regulatory framework. This is not a blatant act of lawlessness, as some outsiders would contend; but it is an affirmation of the importance and place of subsistence resources in the cultural fabric of Deg hi'tan and Doy hi'tan Athabascan life.[137]

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[136] This type of knowledge exists throughout the rural North and varies with each local and particular resource. Ganley (pers. comm.) has provided details for the systems employed by Riverine Inupiat of northwest Alaska.

[137] In the Deg hi'tan and Doy hi'tan context such acts clearly illuminate the gulf between what is "legal" on the one hand versus what is "rational" action as a community member on the other.

Cultural and ideological imperatives which guide harvest behavior are extremely complex. People in the area consider it to be improper to name the game directly one plans on taking. Further, certain species and certain contexts preclude direct discussion of intended subsistence activities. To do so is considered disrespectful; and may create a situation of physical and spiritual danger for a person who violates these rules at worst, and an unsuccessful hunt at best. This is also true of many other areas in Alaska and Canada (Brody 1982; Freeman and Carbyn 1988; Nelson 1983). This practice presents a situation in which there is potentially little or no agreement between the external and internal regulatory systems. Current regulations require tags if hunters plan to pursue bears or moose. The simple act of acquiring these tags (particularly for brown bear) is a fundamental violation of cultural rules which govern the behavior of the hunter towards his quarry.[138] This conflict is compounded by the requirements of 'sealing' brown bear hides within 30 days of procurement:

> Sealing means placing a mark on or a tag on a portion of an animal by an authorized representative of the ADF&G; sealing includes collecting and recording information concerning the conditions under which the animal was harvested, and measurements of the specimen submitted for sealing, or surrendering a specific portion of the animal for biological information.... A person who possesses a bear shall keep the skin and skull together until a representative of the ADF&G has removed a tooth from the skull and sealed both the skull and the skin... (United States Fish and Wildlife Service 1993: 6-8).

Given this requirement, it shouldn't be surprising that western regulatory measures are generally viewed with suspicion if not contempt by local users. It is widely believed that external regulations are largely politically motivated (e.g., a result of competition between user groups), and/or developed in an environment quite alienated from the natural environment in which the resources are harvested and used. The relevance and applicability of formal management measures are questioned by local people. At the same time, the ramifications of not following external regulatory authority is often viewed with a certain degree of discomfort and fear; local stories include many which illustrate what happens "if you get caught."[139]

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[138] For a detailed description of proper conduct regarding treatment of bears by Athabascan hunters see Nelson (1983, 1982).

Local people view themselves as largely estranged from the regulatory process. Opportunities to affect management decisions, such as participating or testifying before the fish and game boards, and/or involvement in local advisory boards, are viewed with varying degrees of interest, suspicion, and contempt. Stories abound of people participating in the regulatory process, with little or no resultant change. Further, people are extremely sensitive to the fact that local information is treated as inferior to that provided by biologists. The regulatory process is incomprehensible to many people, and the lack of input afforded to local people makes it a highly suspicious system. At the same time, further regulation is viewed as inevitable. These factors combined leave local people with, in their eyes, few options. They can either follow state and federal regulations, and thus take part in a system from which they are functionally excluded; or ignore the regulations, follow their traditional ways, (which often make more cultural and biological sense), and be outlaws.

Clearly there is a huge difference between what local people and western managers consider to be appropriate management of wild resources. These differences stem in large part from widely divergent world views, which include very different notions of the individual with regard to the community, as well as different ideas of what constitutes a resource. Also, the influence of politics with respect to management, and indeed, with regard to what is managed, cannot be underestimated.

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[139] The counterpoint to this is that to "get caught" means external regulations are not always followed.

Western and Emic Perceptions of Resources

From the Western perspective, large mammals such as moose, caribou, and bear are viewed as largely for personal (individual) consumption and/or as trophies. The meat harvested is almost always supplementary, and rarely serves as the only meat eaten in the household. Quite often the antlers are of greater import than the meat. For example, during fall moose hunting season, it is not unusual to see people driving around with moose antlers in the back of their pick-up trucks-- perhaps testimony to their hunting prowess? Further, moose are rarely killed close to the road; and while sportsmen rarely carry out all of the edible meat, they never forget to carry out the antlers--particularly if it is a large bull. Heads and/or antlers of animals are frequently utilized as household decorations.

In contrast, large mammals are what is best referred to as essential resources according to the emic perspective. As noted in earlier chapters, the "importance" of these essential resources is conditioned by such factors as availability or lack thereof, desire or need to fulfill customary or ideological expectations (i.e., funerary potlatches, trade with other groups, etc.). As the previous two chapters illustrate, the meat gained from large mammal harvests is substantial; and serves as the primary source of protein for the majority of households in all four communities. In contrast to sports hunters, local people transport all edible parts of the animal first, and take antlers as space dictates (antlers are utilized for tools i.e., knife handles, etc.).[140] Antlers are frequently left out in the field. The hides of caribou, moose, and bear are often taken and used for practical purposes, such as blankets or bedding, and for making traditional or ceremonial clothing.

As has been noted, fish also provide an important source of protein to the Deg hi'tan and Doy hi'tan, and are thus also classified as essential resources. From the western persective, fish are generally considered non-essential; small amounts of fish are commonly harvested, but the protein is generally peripheral in importance to that provided by store-bought meat. Similarly, ducks and geese provide a peripheral source of meat to sports hunters, as well as trophies, on occasion. To the Deg hi'tan and Doy hi'tan, however, ducks and geese are an essential resource, both symbolically and actually, as they provide the first source of fresh meat in the spring.[141]

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[140] According to the Athabascan way, there is a use for almost all parts of the animal-- from the hooves to the nose to the brain.

Berries and wood are generally seen to be non-essential or supplemental supplies of food and heat, respectively, by western users. According to the emic perspective, however, this is not the case. Berries provide an important dietary supplement that is enjoyed all year long. From the emic perspective, wood is valuable in its raw form for warmth and as a source of raw materials (e.g., for homes, fishwheels, etc.). It is used as the only source of heat and an important secondary or back up source in many of the households in Grayling, Anvik, Shageluk, and Holy Cross. In addition, some enterprising individuals harvest firewood in the winter and sell it-- thus wood also provides a ready source of cash, another valuable resource.

Fur bearers provide another interesting study in contrasts. According to the western perspective, fur bearers are non-essential; the furs provided are generally seen to be luxury goods, not items of necessity. This is not to say that non-Native do not run traplines; some do, although it is typically on a recreational or secondary income basis, and the furs attained are almost always sold. In contrast, from an emic perspective fur bearers are valuable not only for the furs but also for the meat some of them provide (e.g., beaver, rabbit). The furs are multipurpose: they provide raw material for warm and decorative clothing (e.g., beaver and muskrat hats and mittens) which can be worn for personal use; given away for ceremonial purposes (potlatch); or traded, bartered, or sold. Raw furs are also traded, bartered, and sold. The resource is thus valuable in its raw form, as well as in its transformed state and also for what it can provide access to-- cash.

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[141] While illegal, Spring harvests are essential due to a lack of other primary protein sources, and limitations on travel this time of year to acquire other resources. Travel is limited this time of year due to breakup-- snowmachine travel is dangerous and boat travel is not yet possible.

Land is important for both symbolic and material purposes to many people and many societies. Some would argue that it is not just the land per se which is essential to continued existence for hunter-gatherers in the modern world, but rather control over the land (Asch 1984; Feit 1994; Feit 1991; Nuttall 1992). By control I do not mean actual ownership, but rather access.[142] As Halperin (1990: 121) describes for certain small scale farmers in rural Kentucky, "... They also have strong ties to the land, ties that give them a sense of control over their lives and a place with which to identify. Nuttall (1992) provides a detailed backdrop for individual and societal identification with land among the Inuit of Greenland, arguing that direct and immediate connection with the land is essential to Inuit identity. Likewise, to the Deg hi'tan and Doy hi'tan, access to and a sense of identity with the land is essential for continued and successful existence.

Land is also a resource which in some ways provides the foundation upon which the entire way of life of the Deg hi'tan and Doy hi'tan rests. That land is a critical factor upon which the hunting and gathering way of life depends is a fact, one which has been documented by numerous researchers (Asch 1979b; Berkes, et al. 1994; Bicchieri 1972; Feit 1991; Freeman 1986; Ichikawa 1991; Lee and Devore 1968; Muller-Wille, et al. 1975; Nelson 1978; Savishinsky 1974; Usher 1976b; Wein and Freeman 1995; Wenzel 1985, 1986b; Wheeler 1990). Indigenous people have been extremely clear on the importance of land to their well being; one elder claimed that "... The most significant thing in the Indian life is identity with the land..." (Berger 1985: 47). Usher (1976b: 14) describes the importance of the land and its resources to the Inuit:

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[142] The debate over the existence of Indian Country in Alaska and by Alaska Tribes is one which is likely to be around for a long time. A recent court decision (State of Alaska ex rel. v. Venetie, 101 F.3d 1286 (9th Cir. 1996)) determined that in limited instances, Indian Country can and does exist in Alaska. Because the status of land as Indian Country equips Tribes with certain powers (e.g., taxation, limiting access to land and resources, rights to manage fish and game, etc.), it has resulted in considerable consternation on the part of some people, particularly state officials, who, shortly after the Venetie decision was announced, appropriated one million dollars to fight the decision and bring it to the U.S. Supreme Court. Ironically, the designation of Indian Country could help to foster independence and self-sufficiency in Tribes-- the lack of which they are currently damned for. In any event, at present, Tribes have no definitive legal long term control over their land, particularly with regard to hunting and fishing.

> These facts demonstrate a fundamental and continuing economic dependence by Native people on the traditional resources. This economic dependence explains why Native people have from time to time told this inquiry that the land is like a bank to them, their constant and reliable sustenance so long as it remains healthy. But there is also a deep rooted social and cultural reliance on the land. To native people the land is more than just a source of food or cash. It is the permanent source of their security and well being. It is the basis of what they are as a people. They know that the land, and the birds, fish and animals it supports, have sustained them and their ancestors since time immemorial. Properly cared for, they feel it can always do so.

Continued identity, in the form of access, is critical to continued viability of the hunting and gathering way of life. From the emic perspective, land is the cog upon which the subsistence way of life depends.

In marked contrast, from a western perspective, land is a thing to be owned, either privately or publicly.[143] As a thing to be "owned," land is a material asset. It is perceived according to the western perspective that it can be utilized for profit through investment speculation, resource extraction (mining, logging, etc.), land leases and sales, use permits, and tourism. These activities are largely in direct conflict with Indigenous perceptions.[144] The western perspective permeates the management of fish and game on lands as well. Through the imposition of bag limits, seasons, and other regulations, State and Federal governments impose the "asset-oriented" view of lands and resources. In turn, this view reinforces an implicit ownership by external agencies in all potential land users. In spite of the fact that the majority of wild resource use as described in this study is by Native residents, they are nonetheless obligated to abide by the paradigm of an "asset-oriented" utilization of lands. Furthermore, regardless of community, Tribal, or individual associations with hunting and fishing areas, local residents must become "visitors" to their lands-- a point driven home by the requirements of use permits and externally imposed bag limits and seasons. Though the dilemma is obvious, no resolution is forthcoming.

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[143] Wheeler (1990) provides an overview of the differences in western and Indigenous perspectives on land use and ownership, a synopsis of which is in Appendix H.

[144] Under ANCSA, regional coporations essentially became land-holding entities, expected to make a profit from and through their lands. This situation has caused considerable dissension and anxiety among shareholders, and is a not inconsiderable source of controversy.

I turn now to a discussion of material and human resources to illustrate differences between the western and emic perspectives. Snowmachines, three and four wheelers, ATV's (all terrain vehicles), and boats are used primarily for sport or recreational purposes among the general non-rural population; these items are not essential to daily life. As the previous chapters indicate, however, these items of technology are clearly essential for local rural people to have continued access to wild resources. From the emic standpoint, transportation equipment is a capital investment in subsistence--without which subsistence would not occur at the level needed to sustain the community. Quite simply, machines which grant access to wild foods are essential. While people use snowmachines and three and four wheelers for practical and recreational reasons (i.e., to go to the store, and snowmachine races), their most important use is in providing access to resources. While not everyone owns all of the machines allowing for access to resources, almost everyone who wants or needs to has access to machines through borrowing or sharing.

Gasoline, equipment parts, mechanical ability, etc., together referred to as transportation support, are, according to the general, non-rural populations' perspective, non-distinguishable from transportation technology. In contrast, transportation support provides a critical link to the equipment individuals need to get access to wild resources. People constantly trade mechanical know-how, parts, and gasoline in exchange for the use of a snowmachine, boat, or three or four wheeler.

Human resources can be thought of both in terms of individual labor and in terms of the family. Among the non-Native, non-rural population, individual labor is generally expended in pursuit of the most important resource-- capital. Capital provides access to other resources, but it is perhaps most valuable in and of itself. Labor is rarely expended on direct pursuit of food resources; it is expended on attaining capital which is used to purchase other resources. Further, within the general, non-rural population, labor is most commonly expended by the individual on his or her own behalf or in the interests of the nuclear family; and resources are utilized primarily within the nuclear family, and rarely among the extended family. In sum, economic imperatives drive social networks.

In contrast, among the Deg hi'tan and Doy hi'tan, human labor provides for social linkages and access to resources through linkages typified by cooperation, sharing, and family and community activities. Human labor is used for direct procurement of wild resources; and is typically expended by the individual on behalf of his/her extended family, and, ultimately, the community. The family is instrumental in the processing and distribution of resources, and also in terms of providing access to resources. In essence, human labor in the context of the family drives the economic and social system.

These differences in concepts of human labor not only speak to fundamental differences in social organization, but also have broad implications for resource exploitation and economic organization, a point well illustrated by Godelier (1974) in his analysis of the Montagnais-Naskapi Indians and non-Native trapping practices. Godelier attributes critical social differences between the two groups (e.g., the Montagnais-Naskapi always bring their families out to the trapline, in spite of the difficulties in doing so, while their non-Native colleagues rarely do so), to different economic orientations. As an aside, it is interesting to note that in his analysis, Godelier (1974: 46) borrows from the predator-prey model discussed earlier:

> If we analyze this example closely, we know that in both cases the environment and hunting techniques are the same. However, we see two different methods of resource exploitation. The white trapper belongs entirely to a monetary economy and is motivated to maximize his material profits. He will have a tendency to behave like a predator, maximally exploiting natural resources. The Indian, on the contrary, will have a tendency to abuse these resource less, not so much because he wishes necessarily to assure their reproduction but because his primary desire is to maintain certain social relationships, a certain way of life.

Godelier (1974) thus argues that among the Montagnais-Naskapi Indians it is social relationships, the human resources, if you will, that drive patterns of resource exploitation, and in a general sense, economic decision-making. Social relationships are the capital. Among the white trappers, in contrast, social relationships are a product or result of economic decision-making, the latter of which is directed at maximizing profit or capital. Human resources as seen from the emic perspective, and as illustrated in Godelier's analysis, are the foundation upon which the society lies; and the basis from which most decisions are made. This interpretation is particularly evident when looking at emic and western perspectives on cash and related resources.

For the purposes of this discussion, and better to understand emic perceptions of cash as a resource, cash is broken down into five different categories. First, from the western perspective, cash has a fixed or standardized value; and it is used for purchases (goods and services), and investments only. Cheques are representative of cash; and have no value in and of themselves, but rather represent a note on an account. Investments occur in the form of savings and bank accounts, stocks and bonds, etc. Dividends represent a return on an investment, and are typically rolled over for additional investment. Wage labor is the norm; and is considered by most to be essential, with a forty hour work week serving as the norm. Finally, transfer payments, generically referred to as 'welfare,' are viewed by the general non-rural population with disdain and often contempt, to be used (if at all) only as a desperate measure, or in extentuating circumstances.

Not surprisingly, rural, emic perceptions of the five categories differ greatly from those discussed above. A basic difference in perception has to do with the notion of cash having a standardized value. In the emic paradigm, cash has a variable value. As with wild resources, the value or importance of cash has to do with its availability or lack thereof, and with the presence or absence of other resources (and in what quantity). Sansom (1988: 161) describes a similar phenomena among Australian Aborigines, for whom cash transactions operated on a sliding scale, according to the transactors:

> Moving with Aborigines, I learned how to value most of the acts and things they valued in the terms they used. Price was another matter. In the way things worked, it seemed that prices belonged not to a generalized system of exchange but to the particular transactions in which they vested (Sansom 1988: 161).

At times when cash is readily available, such as after distribution of the Alaska Permanent Fund dividend, or after a good commercial fishing period or season, cash is treated very differently, some might say carelessly, compared with other times when it is not readily available. For example, while many people utilize the Alaska Permanent Fund dividend to purchase major items of technology, for others, the Alaska Permanent Fund dividend is used to travel into town (typically Anchorage or Fairbanks) to shop for Christmas. From an outside perspective, this practice might look like a waste of money, particularly for people who regularly lack cash flow. From the emic perspective, it makes sense, because the "kids need Christmas presents" (SC pers. comm.). As another example, following an excellent firefighting season, cash was plentiful; and individuals in one community participated in a card game which lasted for several days.[145] People played cards for money, then for items such as a rifle and even a snowmachine. When asked about the rationale behind this game, one person claimed something to the effect of 'easy come-easy go.' Strategies for managing cash do not fall within the "rational man" paradigm of formal economics-- yet local strategies reflect the local reality of scarce resources; and are therefore "rational" when considered within the appropriate context. Peterson (1991a:73) describes a similar situation for Australian Aborigines, claiming that ".... [P]eople live in a situation where uncertainty prevails and rationality dictates that participants are gamblers and so should hedge their bets..." There is little doubt that the emic notion of cash as having a variable value is consistent with local ideas of resources in general.

It should be noted here that people are not ignorant nor unaware of western ideas about cash, cheques, etc.; to the contrary, people regularly deal in and work with western ideas regarding financial transactions. Once at home and dealing with local people in the local economy, cash functions in the local economy according to local ideas of value. Perhaps it is a conscious choice, perhaps it is means of asserting local control; either way, it is clear that people can and do operate in both economic worlds. Sansom (1988: 159-160) describes the same understanding on the part of Australian Aborigines:

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[145] The prevalence of gambling as an adaptive strategy among hunter-gatherers largely dealing with unpredictable cash flow has received some attention (cf. Altman 1987; Peterson 1993), but is clearly worthy of more study.

> Moving between two worlds, Aborigines experience the double use of cash from day to day. And this is both to reassert and to explain their pointed awareness of the differences between two co-existent and rival philosophies, the one a philosophy of money ..... the other a philosophy of voluntaristic social action in which giving and receiving is conceptualized as the rendering of services by one person to another.

Cheques serve as currency in the local economy. Cheques are commonly given as change from the store. There are no banks (at least not in the conventional sense) in the four villages, so assigning value to a checque makes sense. In doing so, the arbitrary nature of cash and currency is elucidated. It is not uncommon to have a cheque signed over and endorsed across the entire back as it is used and re-used by individuals and businesses in a community.

In the village economy, dividends and investments occur largely in the form of capital investments in subsistence.[146] Dividends are often turned into technology; and investments are in technology, which is functionally, in subsistence. As described in Chapter Four, in the village economy wage labor is largely seasonal and or part-time, and is generally thought of as a means to get access to wild resources through the purchase of transportation or transportation support. Employment is often goal-oriented; rather than being valuable in and of itself, wage employment typically served as a means to an end. In a sense, for some people wage work is a necessary means to attain the capital necessary to buy the equipment needed to participate in subsistence. As Usher (1976b: 26) explains:

> Jobs, then, are a temporary resource to be exploited towards specific ends. Many Native northerners seek and then leave jobs once they have earned enough for specific purposes. Jobs are not valued for their own sake, but as temporary strategies.

People might work for wages until they have enough money to buy a snow machine or a boat, and then quit. Sometimes, one person in an extended family will work to allow for continued access to subsistence for the household or extended family. Working a forty hour work week is the exception, not the rule.

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[146] As is noted by Simeone (1995: 91), significant capital also goes into other arenas, notably the potlatch. He quotes one elder who states that "[if an] Indian made a lot of money and didn't use it for potlatch then some Indians might make fun of him."

In sum, part-time or seasonal work, or earning cash through the sale of renewable resources (furs, fish) and locally produced crafts, is best seen as a strategy employed by hunter-gatherers (and others) to provide for their chosen way of life. Pursuing opportunities to harvest wild resources is the preferred way of life. It is a way of life, however, that requires capitalization. It must be noted that wage labor is not without its hazards. As Wenzel (1989: 14) notes:

> While wage employment, when available, has always offered some Clyde Inuit the opportunity to obtain cash, sometimes in larger amounts than hunting, it is also the case that wage labor costs productive hunting time.

Thus, pursuing wage earning and cash generating opportunities is a tricky balance; and often requires multiple strategies to attain the cash necessary to pursue effectively the harvests of fish and game resources.[147]

Perhaps the biggest difference in perceptions lies in local peoples' ideas about transfer payments. Transfer payments are viewed as yet another resource to exploit. Transfer payments can and do assist with providing access to wild resources, through helping with the purchase of gas and other essentials. Transfer payments fit in well with the cyclical and seasonal nature of the subsistence economy; when few resources are available, transfer payments are a resource to call upon. On the other hand, when other resources are readily available, the need for and dependence upon transfer payments drops.

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[147] As discussed in Chapter Four, opportunity costs are an important facet of wild resource use and, while not addressed in this dissertation, is a topic worthy of study.

Conclusion

It is well known to many anthropologists and some state and federal managers, and perhaps more painfully to rural residents, that there is a huge gulf between emic and western perceptions of wild resource management. So is it odd that a similar difference exists between emic and western perceptions concerning resources, particularly cash?

Similarities in the differences underlying emic and western perceptions of management and resources, particularly cash, are enlightening. For example, the external management system attempts to manage peoples' behavior, whereas the local management system attempts to manage the community's relationship to resources. In spite of these very basic differences, and the fact that the formal management of wild resources is widely viewed by local people to be an external system over which they have little, if any, influence, the system is imposed on local users-- with little regard for their perceptions or management beliefs thereof. In spite of this outside pressure, local people continue with their internal management guidelines-- and the maintenance of social relationships continues to provide the context within which the community exists. Similarly, western notions hold that cash has a prescribed or standardized value. According to local perspectives, however, cash has a variable or relative value; which, like all other resources, fluctuates over time. In spite of this fundamental difference, the Western perception of cash is the one typically applied and utilized to explain, understand, and describe rural economic systems. Again, however, local people continue to operate well outside of the western economic paradigm, in which economic decisions, like all others, are grounded in the social fabric of the community.

Clearly, wild resource management and analyses of rural economies have faltered on the same point-- namely that external meanings, values, and paradigms have been indiscriminately applied and assigned to rural communities without regard to internal paradigms and values. Assumptions about local wild resource use and management, and rural economics have largely reflected external, not internal, reality. In spite of this situation, local people have been able to incorporate cash into their system-- into their emic reality. Why this is possible has to do with the fact that cash is a resource, as opposed to a political system of resource management. If management were simply a tool to be used, there is little doubt that it would be incorporated and successfully utilized by the people of Grayling, Anvik, Shageluk, and Holy Cross.

CHAPTER EIGHT:
Discussion and Conclusions

Introduction

Perhaps as a result of what Lee (1992: 43) referred to as a search "... for a vision of human life and possibilities without the pomp and glory, but also without the misery and inequity of state and class society...", research on the hunting-gathering way of life has been a focus of considerable anthropological thought for at least the past four decades. In all of the work on hunter-gatherers, nowhere has the focus been more intense than on economic and cultural change; specifically, the effects of cash and commoditization of resources. A catalyst for much of this work was Murphy and Steward's article, "Tappers and Trappers: Parallel Processes in Acculturation" (1956), in which the authors, arguing from a cultural ecological theoretical perspective, predicted dire consequences for hunter-gatherers who got involved in selling resources upon which they depend. Since publication of the article in 1956, considerable anthropological dialogue has focused on defining and describing the so-called modern hunter-gatherer or forager economy.

While theoretical and methodological foci have changed, a consistent theme has been the separation of subsistence and cash sectors of the economy, be it labeled as a dual economy or separate sectors (Chance 1984, 1987; Dalton 1967; Fall 1990; Headland and Reid 1989; Honigman and Honigman 1965, 1970; Jorgenson 1990; Langdon 1991; McElroy 1975; Morantz 1984; Oswalt and VanStone 1963; Taylor 1979; Vanstone 1960; Wilmott 1961; Wolfe, et al. 1984; Young 1992). Cash is often treated as secondary in importance to floral and faunal resources, taking a distant back seat to the production and consumption of animal and plant resources. Alternatively, the use of cash is depicted as steadily encroaching on the use of floral and faunal resources, making their eventual use non-existent at worst or a recreational endeavor at best. In either extreme, while the significant and important contribution made by cash to the subsistence system is often recognized, the relationship between the two is typically characterized as a fragile balance and a transitory state.

Discussion

The root of this distinction-- the separation of cash and subsistence-- lies in the much touted "transformative powers" of cash (cf. Bohannon 1967 [1959]). Few would dispute the fact that the introduction of cash has the potential to change hunter-gatherer economies, but the degree and nature of change *is* debatable. Clearly, there are those who argue, as Murphy and Steward did, that with the introduction of cash comes the inevitable demise of the culture. The opposite of that perspective is argued herein; the introduction of cash, while clearly instigating or exacerbating change, can actually support the local economic system. In fact, the central method of obtaining western goods is cash; and cash, like western technology, is quite well integrated into the economy.

It is likely that the so-called transformative powers of cash and commoditisation relate to the context within which the introduction of cash occurred-- i.e., was it under duress, or was it a matter of choice? Obviously, it is not quite that simple and clear cut; and as Peterson (1991b: 13) remarks, ".... [I]t would be romantic and naive however, to see the impact of cash as largely, if not entirely, under internal control...". Nonetheless, the context within which cash enters a system is important; and, while not addressed in this dissertation, it is a topic worthy of study.

I have argued that the degree of local control exerted over the meaning and value of cash is a critical aspect of the potential for change. If, as many would suggest, cash enters a system with all of its western cultural baggage (i.e., standardized value, generalized exchange value, etc.), then it is likely that its transformative powers are/will be considerable. On the other hand, assuming cash enters the local system absent its associated western values/understandings, then the transformative powers would, in fact, be negligible. It is not the cash per se, but its associated meaning and values, which potentially undermine local economies. If western values are not attached to cash, and cash is instead imbued even partly with local values, then it logically follows that the use of cash in and of itself would not spell the demise of the local economy; but could, in fact, support it.

Sansom and Peterson both provide support for this argument. Sansom (1988: 159) in working with Australian Aborigines, notes that:

> Refusing assimilation of being to mainstream ways, Australian Aborigines have turned things around by assimilating money to their modality for exchange. Once cash enters a Darwin fringe camp, a dollar remains an Australian dollar only to the extent that it is still backed by the reserve Bank and so retains its potential to be re-entered into the general, outside economy where it will return to its market function. While in Aboriginal possession, the dollar is a thing both transformed and ambivalent. It is transformed because, if entered into transactions between Aborigine and Aborigine, it will no longer function in market terms as a generalized medium of exchange but will instead take on character as an amount subject to valuation in acts of help, helping and helping out. When this happens, the dollar amounts lose their capacity to function as prices. All at once the conventions of regular economizing are left behind.

Similarly, Peterson (1991a: 83-84) observes that:

> Even though many Aboriginal people are poorly informed about the nature and sources of money, their understandings and constructions of money work for them. They use money effectively within their own cultural and social contexts putting it to ends they value or which seem not greatly inconsistent with the kin based economy. ... that is to say most people have assimilated cash and commoditisation to their existing cultural understandings and social purposes and in so doing defused the depersonalising aspects.

As Sansom and Peterson point out, the value system within which cash is used in these instances is locally determined; and the external or western value system is left behind as cash enters the emic reality. Wenzel (1985), (borrowing from Marxist terminology), argues the same for the Inuit of Baffin Island, noting that cash has been "penetrated and converted" in the local economy, rather than having penetrated and converted.

As illustrated in Chapter Seven, the same is true for the people living in the four communities of Grayling, Anvik, Shageluk, and Holy Cross, in which local perceptions about and evaluations of cash are very different from those shared by mainstream society. In the four communities, cash is utilized according to an internal set of values and meanings, not according to western ideas. Most simply, cash is one of many resources in the local economy. The local economy reflects the use of many resources, wild fish and game, cash and imported technology among them. These resources do not represent separate spheres, segments, or economies; and to separate subsistence and cash is to create a false dichotomy.

Unlike the western system in which cash has a standardized value that the user is implicitly expected to observe, in the local system cash, like all other resources, has a relative value, conditioned in part by its availability. Once in the system, (regardless of how they got there), cash, moose, salmon, or imported technology are resources; accordingly, and within certain parameters, resources are exploited. It matters not whether the resource in question is moose or cash; it is still subject to local perspectives which guide its use and value. To illustrate, an individual who was short of cash sold a prized rifle for $275.00. Several months later, when he had cash available, he offered $500.00 for the same rifle. The rifle had not changed, but the amount of cash available to him had; and the particular individual was willing to give over all of his cash (more than double what he was paid) to get the rifle back. Another example which illustrates the interchangeable and flexible nature of cash and goods in the local economy is the individual (A) who loaned another individual (B) $100.00. Several months later, as a means of payback, individual B gave individual A a slightly used rifle scope, valued at around $300.00. He had won the scope during the course of a poker game. When individual B repaid the debt, he informed individual A that the scope was valued at $300.00, thus subtly forcing A to incur debt. This example illustrates well the nature of the economy; and the fact that all resources, be they cash, moose, technology or salmon, function as the currency of subsistence. To understand the economy from the perspective of the people, in this instance Alaskan Athabascans, one must look at all resources as comprising the economy: cash simply cannot be separated from subsistence; and has to be understood as part of, and in the context of, subsistence.

So just what comprises the economy of the Deg hi'tan and Doy hi'tan Athabascans? As outlined in Chapters Four, Five, and Six, almost all households in Grayling, Anvik, Shageluk, and Holy Cross hunted, fished, trapped, or gathered resources of some kind. From 75 to 88 percent of the households in the four communities participated in hunting; 69 to 90 percent participated in fishing; 37 to 71 percent participated in trapping; and 77 to 98 percent participated in gathering.

Of all wild resources, moose provided most (if not all) of the large animal protein harvested and used in the four communities. While there was interest in harvesting caribou, distance and expense involved proved to be limiting factors. Black bear were harvested in three of the four communities, and brown bear were reportedly harvested in two of the four communities. The strong cultural and spiritual parameters associated with hunting bear, particularly brown bear, made it likely that reported harvests were underestimated.

Subsistence fishing provided a range of about one third of the overall harvest in Holy Cross to just over two thirds of the total harvest in Shageluk. Of all of the fish resources, salmon comprised the bulk of the fish harvest in all four communities, accounting for more than half of the fish harvest. In addition to salmon, grayling, blackfish, eulachon, trout, whitefish, sheefish, and pike were also harvested, although the latter three accounted for the majority in all four communities. Migratory waterfowl harvests also contributed to the overall harvest, especially in the spring. While not a major part of the overall harvest, furbearers were nonetheless an important component. Finally, berries and greens were collected, as was wood (both for heat and for construction purposes).

Household harvest levels varied considerably. Grayling was the highest at almost 4,000 pounds, and Shageluk was the lowest at under 1,500 pounds; mean household harvest level in Anvik was over 2,500 pounds, and in Holy Cross mean household harvest was just over 2,000 pounds. Pounds per capita harvested varied from a high of almost 900 pounds in Grayling, to a low of about half of that (445 pounds) in Shageluk. Per capita harvest in Anvik was about 50 pounds less than that of Grayling; and Holy Cross was in between Grayling and Shageluk, at about 634 pounds.

In addition to wild resources, cash was also utilized by all households. Attained through a variety of sources including wage labor, commercial sale of resources such as fish and furs, the sale of handicrafts, transfer payments, and dividends or pensions, cash, like all other resources, was typically both seasonally and variably available.

The majority of wage employment in the four communities was seasonal, and most of the other cash generating opportunities were resource-extractive, i.e., commercial fishing and trapping. Few paid positions were full-time year round; the majority of employment was part-time and/or seasonal. A low of 20.8 percent to a high of 41 percent of the households in the four communities had no employed members during the study period. From 34.1 percent to 46.9 percent of the households had one member employed at some type of work, and from 15.4 to 29.3 percent of the households had two members employed. In Grayling and Holy Cross, a small percentage of the households had four employed members; and one household in Anvik had five members employed at some type of work.

A total of 146 jobs of all types were available in the four communities during the study period. Of these 24 percent were full-time year round positions. Part-time year-round and part-time seasonal positions comprised the majority of the jobs in the four communities (63.7 percent). Slightly fewer than half (44.5 percent) of the available positions are seasonal and just over half (55.6 percent) are year-round.

Commercial fishing provided an important source of cash to some people. Thirty-one individuals in the four communities hold commercial fishing permits, 68 percent of which were fishwheel permits. The primary fishery in the area was a roe fishery which targeted summer chum salmon; a lesser fishery targeted king salmon, which are sold whole. During the 1991 commercial fishing season, fishermen in sub district Y4A sold

5,289 summer chum salmon and 128,231 pounds of roe; and the fishermen on Y3 sold a total of 2,344 Chinook salmon. While fishermen from other areas fish in these subdistricts, the 31 commercial fishermen in the four communities fished in these areas; and were responsible for, and benefited from, much of this harvest.

Trapping also provided a limited source of cash to some people. In recent years, however, the depressed national and international fur market has negatively affected local fur trappers. According to one of the local fur buyers, the quality of furs is consistent with past years; but the number of furs available for purchase, and the buying price have decreased. People continue to trap, often using furs as a means of barter and/or trade.

In addition, transfer payments (i.e., AFDC, APA, FS, Medicaid), old age payments (social security and longevity bonus), and dividends (Alaska Permanent Fund dividend) provided cash to households. Household income levels varied within and between communities; a high household average income of $21,641 was reported for Grayling, and a low of $10,694 was reported for Anvik. According to the 1990 census, 12.6 percent of the population in Grayling lived below the poverty level, as compared with 45 percent in Anvik, 35 percent in Shageluk, and 48.8 percent in Holy Cross.

Both wild resources and cash are used by people and households in the subsistence system. The nature of the relationship between the two is the critical question. Why should cash be considered one of many resources available to the Deg hi'tan and Doy hi'tan instead of as a separate system?

First, consider the interplay between cash and subsistence in terms of amount of resources harvested. Grayling had the highest mean household harvest, the highest per capita harvest, and the largest average household size (4.3) of all four villages. Of the four communities, Grayling had the highest percentage of households owning snowmachines, boats, and kickers. Grayling and Holy Cross had the highest percentage of households with full-time, year -round jobs. In contrast, Shageluk had the lowest mean household harvest (about 35 percent of Grayling's) and the lowest per capita harvest (49.8

percent, or about half of Grayling's total harvest). Shageluk had the lowest percentage of households owning major subsistence equipment, and on average spent the least per household on non-equipment costs associated with subsistence (i.e., gas, etc.). While Shageluk's employment profile was similar to the other three villages, no one in Shageluk fished and few trapped for commercial purposes. Finally, participation in hunting, fishing, and trapping was lower in Shageluk than in any of the other three villages, although Shageluk showed higher participation rates in gathering than did Holy Cross.

Explanations for such inter-village variance in wild resources harvested and available cash are multifold; and include such issues as distances to the particular resource area (thus affecting time, money for gas, supplies, and equipment); resource use area available or open to the individual and the community; other available resources (i.e., cash, imported technology); and individual and community initiative, organization, and abilities.[148] Also as explained in Chapter Four, demographic differences can also affect harvest patterns and resource use, as can availability of and participation in wage labor. Clearly, however, the amount of cash resources available to put towards harvesting wild resources is important.

The harvest of wild resources is dependent, in part, on the availability of other resources, particularly cash, a fact that has been noted by many researchers (Alaska Natives Commission 1994; Asch 1976a, 1976b, 1977; Freeman 1976, 1986; Muller-Ville, et al. 1975; Usher 1976b, 1981, 1986a, 1986b; Wenzel 1985, 1986b). Wage labor is a source of cash, although as Wenzel (1995) points out, participation in wage labor also costs productive hunting and fishing time. Other sources of cash including dividends, transfer payments, and old age pensions, do not cost productive hunting time, and may in fact be more conducive to hunting and fishing, as they potentially "free- up" labor time and effort. Commercial fishing and trapping also contribute cash as well as other resources (e.g., furs, meat), and as such represent the only means to achieve both protein and cash simultaneously.

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[148] As discussed in Chapter Three, it is important to remember that there are distinct differences in the nature of contemporary and historic settlement patterns which have affected harvest patterns. Partly as a result of imposed infrastructure and education, contemporary communities are generally centralized; and have been since the early part of this century. In contrast, nineteenth century settlements were largely seasonal; and individuals traveled in small groups during the majority of the year. In contrast to contemporary times, people were not physically, economically, and socially tied to one spot. Their resource harvesting patterns were therefore far more disperse. Because people are tied to one area, they must travel farther and farther (and spend more and more money on gas) to get the wild resources they require.

In the case of the four villages of Grayling, Anvik, Shageluk, and Holy Cross, a few things seem certain. Harvesting wild resources requires cash resources and imported technology. It is likely that there is a threshold below which wild and cash resource harvesting and use drops significantly, as illustrated by the small percetnage of households consistently utilizing few resources of any type. It is interesting to note that the absence of cash, at least for a finite period of time, does not mean that wild resources will not be harvested. In many instances when individuals experienced a short term cash shortage, other people compensated by sharing technology, lending gas, and sharing harvested wild resources. The long term and consistent absence of cash and wild resources together, however, would likely leads to demise of the local economy. Above that threshold, however, use of cash and wild resources work together through a multitude of strategies to contribute to the economic viability of a particular community and household. Further, commoditization of resources does not result in cultural demise, as indicated by the fact that the one community not participating in commercial fishing or trapping had the lowest level of resource (wild and cash) production of all four villages. In a sense then, it is the sum total of resources which contribute to the overall economic health of households and communities.

The relationship between seasonality of wild resources harvested, and intake and expenditure of cash also supports this argument. Just as was the case historically, there is a strong seasonal component to contemporary resource use today. Emic perceptions of the seasons and the annual cycle allow that the year begins in spring, typically prior to or at breakup. Resources are harvested throughout the year, their harvest depending in large part on their availability and access. Typically one or two activities are the focus of a particular season. For example, migratory waterfowl are an important focus of spring, while fishing, especially for salmon, is an important focus of summer. Moose and migratory waterfowl harvesting as well as berry gathering could be said to be the major fall time activities, and trapping is a focus of many households in the winter. Fishing for non-salmon species is done throughout the year, as is wood collecting. Birds other than ducks and geese (e.g., ptarmigan and grouse) are also harvested throughout the year. Black bear are also typically harvested throughout the year, although emphasis on their harvest is in fall. Brown bear are harvested only in spring and fall, with the former being the most important season.

There is a clear relationship between seasonality of wild resources harvested and average seasonal expenditure on non-equipment household expenditures. The highest seasonal expenditure occurs during fall hunting, when the majority of meat taken during the year is typically harvested. Similarly, summer fishing received the second highest seasonal expenditure; summer fishing brings in the majority of annually harvested fish (salmon and non-salmon). Some interesting intra-community variation occurs in the overall patterns. For example, Anvik households spend more on trapping than any of the other three communities. This situation is consistent with historic patterns of resource use. In addition, Holy Cross households spend less on summer activities than households in the other three communities. This pattern may be tied to the participation of Holy Cross residents in a different commercial fishery (i.e., they do not have a roe fishery in Holy Cross and are limited to selling whole fish); and to the fact that commercial permits in Holy Cross are predominantly (90 percent) fishwheel permits, which affords a slightly different harvest.

Finally, and perhaps most importantly, local perceptions and behaviors point to the fact that cash and wild resources are treated as one and the same, once in the system; and to protray this differently is to not reflect local reality accurately. Because of the temporal and spatial variation of all resources, the Deg Hi'tan and Doy Hi'tan have developed strategies to deal with resource shortages and windfalls. One such strategy, I have argued in this dissertation, is to apply the same strategies people utilize to deal with wild resource shortages and windfalls to cash; that is, when available, use it to the maximum extent possible, and when it is not available, make do with other resources. In the local economic world view, this strategy makes sense-- resources, especially cash, *are* unpredictable; and to treat them as anything else is decidedly un-economic. As described in chapter 7, emic perceptions of cash and related resources are based on ideas very different than those upon which western notions are based. In the context of the local reality, however, they make sense.

In sum, from the local perspective, the economic world is one based on uncertainty and unpredictability. The most effective means of dealing with this uncertainty, from the local point of view, is to utilize resources to the maximum extent possible; within locally prescribed parameters as discussed in Chapter Seven; when, and as, they are available. This strategy affects all resources, cash included. Examining cash as distinct from wild resources is thus an inaccurate reflection of emic reality.

Conclusion

> The style and structure of a culture are often more permanent than its content. In adapting and defining themselves, the techniques that people use may be more important than the materials they manipulate. Along with the changes they have experienced in recent years, the Hare have shown that movement can co-exist with diverse economies, and that flexibility can supersede the confinement of rules and architecture. Old values can have contemporary relevance if they are malleable ones, and if people think enough of them to redefine their applicability (Savishinsky 1974: 205)

Many researchers have discussed the long term and extensive use of fish and game and cash resources by Indigenous inhabitants of the North. A critical point that separates this analysis from many others is the approach taken to place cash within rather than external to, the local subsistence economies. I have argued that local people view cash as one of many resources to be exploited when available, and to a maximum extent. Cash is incorporated into the local economy in a way which supports and reflects local perspectives. Cash is an essential resource. It provides access to imported technology, and thus provides for continued and effective wild fish and game harvesting. It buys commodities such as gasoline, home heating fuel, sugar, and flour. Like all resources, however, cash availability is generally unpredictable; and subject to seasonal, annual, and cyclical variation. In these respects, cash is no different than any of the other resources which comprise the local economic world. As such, it is exploited as available; and its periodic absence is not unexpected, nor does it spell economic demise. The exploitation of cash and cash-generating opportunities does not represent the intrusion of capitalist ideas, but rather is a locally devised and implemented resource use strategy.

Cash, imported technology, and wild resources play an integral role in the overall system of not only the four villages discussed herein, but also in many areas of rural Alaska and the North in general. By using cash and imported technology, people are not giving up nor rejecting their way of life; nor is the importance of subsistence reduced. Rather, the use of cash and imported technology are part of an adaptive strategy which provides a means by which to deal with new economic, demographic, political, and cultural conditions. As one observer aptly notes:

> Attempts to define subsistence characteristically fail to account for the historical record which reflects the important survival values of flexibility, innovation, and change. Survival in a subsistence economy depends upon a blend of traditionally proven patterns and an opportunistic eye for improving chances in the hunt. This has always been the case even though the modern Euro-American concept of subsistence emphasizes the traditional patterns and fails to appreciate the adaptive dimensions (Schneider 1982: 169).

Unfortunately, the use of cash and imported technology is commonly viewed by the uneducated public as a rejection of 'traditional' values; and 'a loss of culture' and subsistence is essentially seen as an anachronism.[149] Concomitant with this idea is the notion that subsistence is incompatible with the cash or market economy; and that if the two are mixed, it is not 'true' or 'pure' subsistence.[150] This belief provides the hyperbolic rationale for the idea that everyone can, in fact, be a subsistence hunter or fisherman. Not limited to the uneducated public, this perspective is also shared by some anthropologists. For example, Young (1992: 57-58) provides the following description of rural Alaskan, primarily Native, economies:

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[149] A recent editorial, entitled "Subsistence Versus Technology" (Medred 1997) provided the following commentary so illustrative of this perspective:

> Though the details vary from village to village, the fundamental patterns of economic life that prevails today in the remote communities of Alaska is unambiguous. The economies of these communities are not subsistence economies; they are mixed economies, encompassing large public or government sectors and sizable commercial sectors as well as ongoing subsistence sectors.... Despite its undeniable importance as a source of country food, subsistence is now tightly linked to the other sectors of the

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> All over the state, Alaska Native cultures are struggling, while the politicians and the do-gooders wrestle with this silliness called subsistence... Lost behind all of this, as it has been for years, is the issue of what, if anything, anyone is trying to save. If it is Alaska Indian and Eskimo cultures which I personally respect and admire far more than I can begin to express in a few words here, something went badly awry years ago. Rooted in the land, those cultures have been in trouble ever since the first internal combustion engines showed up. The situation has only deteriorated as mechanical and electronic technology has roared ahead. Mr. Honda, Mr. Evinrude, Mr. Sony and all the rest are the cultural cocaine of the Bush..... Hiking upriver, shooting a moose, skinning it, cutting trees for a boat frame, tying the frame together, stretching the green hide over that, and then using the homemade boat to float the moose meat home is a lot of work. And nobody really wants to work. For almost all of us, it is human nature to take the easy way. That is why technology rules the world. This is the history of our planet from the Stone Age to the Bronze Age to the modern age. Along the way, less technologically sophisticated cultures are crushed and ground up one by one. Now it is the subsistence culture being destroyed. The remaining vestiges of the hunting culture are next. The more human effort is replaced by machine effort, the more vulnerable these cultures become. *Tools and sweat equity are the currency of all hunter-gatherer cultures. Stop making the tools, stop investing the effort, and the culture invariably dies.* It is happening today on a grand scale without anyone saying much of anything.... Driving your snowmachine out to pop a caribou in the head at close range and drag it home for supper is not a deeply enriching cultural experience-- not to mention the fact that it involves almost none of the tools that define the culture that evolved in this land... (emphasis added)

[150] Along these lines Feit (1993: 166-168) provides the following analysis:

> The government insists that the Cree hunting way of life is dead or dying, and that the Cree Indians are in fact all but assimilated to the national economy of Quebec...... These views present a dual image of Indian hunting. Indian hunting may be ancient, traditional, unchanged, and therefore in balance with nature. Or Indian hunting is modernized, using technology produced in industrial society, having lost its spiritual roots, and practiced for sport not need. The impression is created that there are only these two possibilities....
>
> In this widely held and used concept, the Indian is ancient but timeless, because the meaning of the Indian is always the opposite of civilization, and therefore outside history. Thus the 'real' Indians are those untouched by Euro-Americans. For an Indian to adopt the ways of civilization is to become less of an Indian, for to do so violates the meaning of the idea of the Indian itself. Indians are either radically separated from Euro-American ways, or they cease to be Indians and have become like us.

> mixed economies that prevail in village Alaska. Partly, this is attributable to the capital intensification of subsistence activities, a development that makes it necessary for subsistence harvesters to participate, at least part time, in the cash sectors of the economy or to form alliances with others who participate full time in the cash economy. In part, it stems from the coupling of traditional lifeways with a rising demand throughout village Alaska for goods and services (from modern homes and television sets to modern education and sewage systems) that can be obtained only with cash, a trend that reinforces the need for division of labor in these communities between domestic production and other types of productive activities.

Chance (1987: 85-87) reiterates this perspective, claiming that there is currently:

> .... A major transformation presently re-shaping Alaska: the articulation of forces representing corporate, industrial interests with those of a more subsistence-oriented life, composed mostly of Natives. ... What we find in rural Alaska today is a series of increasingly sharp economic, social, and political conflicts resulting from the interpenetration of two modes of production- kin-based and capitalist.

The argument put forth by Young and Chance is a version of that articulated by Murphy and Steward some forty years ago; but as the above two examples attest, variations of it are everywhere. It is evident in the argument that contemporary hunting and gathering cultures are better referred to as commercial foragers, living their lives because of, not in spite of, their role in the world economy (Denbow 1984; Headland and Reid 1989; Wilmsen 1988, 1989; Wolf 1982a). Similarly, the argument that Alaska Natives have no culture because commercial baking mixes were in evidence in their kitchens[151] is rooted in Murphy and Steward's central premise. These ideas are present even in introductory anthropology texts, in which evolutionary approaches to economy are often the norm: hunting and gathering societies are presented as features of a by-gone era, a casualty of the growth of industrialization and capitalism (Bohannon 1992; Crapo 1996; Harris 1995).

While less overt than the above examples, the characterization of contemporary hunting and gathering economies as being comprised of separate sectors is clearly informed by Murphy and Steward's argument. Implicit in the idea that cash and subsistence comprise separate sectors is the notion that cash is an agent of change; and the mix of cash and subsistence is a transitional state, dependent upon external factors not having (yet) imposed themselves into the local economy. As is noted in the introduction of one such a study:

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[151] Paul Bohannon essentially argued this point during his deposition for the Exxon Valdez Oil Spill Trial. Bohannon was hired as an expert witness by Exxon to argue against the viability of Alaska Native culture in an effort to reduce claims against Exxon for damages incurred by Alaska Natives during the March 1989 Exxon Valdez Oil Spill which spilled 11 million gallons of crude oil in Prince William Sound. Prince William Sound is home to Aluutiq, Eyak, Athabascan, and Tlingit Natives settled in communities throughout the Sound.

> It is not the presence or absence of cash that potentially results in socioeconomic transformations of traditional systems, but the extent to which traditional systems have been affected by the economic, social and political organizations underlying market systems which have penetrated rural areas (Wolfe, et al. 1984: 1).

In describing several Alaskan communities, another researcher claims that "... the communities have attained a special balance in the modern world but their ability to sustain and reproduce that balance is open to question on many fronts...." (Langdon 1991: 288). Finally, Young (1992: 60) notes that:

> We have witnessed throughout the Far North in recent times an accelerating demand for goods whose acquisition requires cash. Whereas Northern Natives once entered into monetized exchanges primarily to obtain modest supplies of tea and tobacco, along with ammunition for their rifles, the residents of northern communities today want to enjoy the benefits of computers, VCRs, washing machines, automobiles and (in more and more cases) outside vacations. ... It is reasonable to conclude therefore, that the mixed economies of rural Alaska are here to stay. But it is equally important to recognize that these mixed economies are presently under severe pressure from a number of quarters. In essence, this is a consequence of the fact that these economies exhibit high levels of exposure to outside forces. When conditions on the outside world change drastically, the mixed economies of the remote communities of Alaska are subjected to extreme fluctuations over which they have little or no control. .... each of the sectors of these economies is presently under siege as a consequence of such external changes.

The basic assumption underlying this paradigm is that cash is a de facto agent of change. It is thus not a question *if* change will occur when cash enters the system, but rather *when* it will occur. I challenge this notion of culture change which stems from Murphy and Steward's lineal analysis. By examining how cash has been incorporated as a resource into the community and the economy, I have shown how cash can actually support the local economy. I would further argue that the situation in the communities of Grayling, Anvik, Shageluk, and Holy Cross is not unique to Alaska, the North, or to the world for that matter. Examples abound of foragers who appear to be carrying on their hunting and gathering way of life in a modern or contemporary setting. This is not to say that people have not changed. It is also not to say that in some instances, cash has not been an agent of change. Either one of those assertions would be patently false. Human history is rife with examples of societies that have ceased to function following the introduction of cash and commoditization. By the same token, human history and the modern world contain many examples of societies and groups of people that, through their dynamic, adaptive potential, have successfully forged a meaningful existence utilizing certain aspects of capitalism while still operating outside its bounds. Quite simply, what Murphy and Steward and others predicted for hunting and gathering societies has not occurred: people are still living a distinctly different way of life and cash has not inextricably altered their life course, sending it on a one-way ride towards devastation. It is clearly possible for some groups of people to utilize cash in a way that does not destroy the internal workings of the society. Perhaps Von Volker (1993: 785) is correct in asserting that, "... societies with a hunting and gathering tradition have a dynamic, adaptive potential that enables them to resist the destructive powers of the world system predicated on market economy....". As the data presented in this discussion have illustrated, such is the case with the Deg hi'tan and Doy hi'tan Athabascans. Perhaps they, as the Hare described above, are able to function successfully in the contemporary world because their values continue to be applicable in the contemporary world.

As the data have shown, the Deg hi'tan and Doy hi'tan Athabascans residing in the four communities of Grayling, Anvik, Shageluk, and Holy Cross rely on a wide variety of fish, game, and cash resources; and the contemporary economies of the four communities are based on a unique combination of wild fish and game and cash resources. Soundly rooted in and conditioned by their historical precedents, the local economies reflect adaptive and flexible strategies employing combinations of wild fish and game resources and cash obtained from a variety of sources. Together, a large number of different resources comprise the basis of the vital and dynamic way of life of Deg hi'tan and Doy hi'tan Athabaskans. They clearly defy the prognosis offered by Murphy and Steward some 40 years ago; far from sitting on the brink of disaster, the Deg hi'tan and Doy hi'tan continue to be real people in viable communities, pursuing a unique and distinct way of life.

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APPENDIX A. POPULATION BY ETHNICITY FOR DOYON REGION VILLAGES

Village	All Persons	American Indian	Eskimo	Aleut	Total Native
Alatna	31	4	25	0	29
Allakaket	138	122	9	0	131
Anvik	82	75	0	0	75
Arctic Village	96	89	1	0	90
Beaver	103	85	12	1	98
Birch Creek	42	38	0	0	38
Canyon Village	--	--	--	--	--
Chalkyitsik	90	83	0	0	83
Circle	73	0	0	0	63
Dot Lake	53	31	0	0	31
Eagle	35	28	0	0	31
Evansville	69	17	10	0	27
Fort Yukon	580	483	10	0	493
Galena	833	364	7	6	377
Grayling	208	194	0	0	194
Healy Lake	47	40	0	0	40
Holy Cross	277	238	18	3	259
Hughes	54	50	0	0	50
Huslia	207	187	1	0	188
Kaltag	240	221	1	0	222
Koyukuk	126	122	1	0	122
Lake Minchumina	32	0	6	0	6
McGrath	528	159	84	5	248
Manley Hot Springs	96	10	4	0	14
Medfra	--	--	--	--	--
Minto	218	211	0	1	212
Nenana	393	169	13	6	188
Nikolai	109	90	6	1	97
Northway	113	107	0	0	97
Nulato	359	345	3	0	348
Rampart	68	56	8	0	64
Ruby	170	122	4	0	126
Shageluk	139	131	1	0	132
Stevens Village	102	89	3	1	93
Takotna	38	17	0	0	17
Tanacross	106	100	0	0	100
Tanana	345	261	9	0	270
Telida	11	10	0	0	10
Tetlin	87	81	2	0	83
Tok	935	105	12	0	117
Venetie	182	168	3	0	171
Wiseman	33	0	5	0	5

APPENDIX B. COOPERATIVE AGREEMENT

Agreement No. 14-16-0007-91-7739

COOPERATIVE AGREEMENT
between the
U.S. FISH AND WILDLIFE SERVICE
DEPARTMENT OF INTERIOR
and the
TANANA CHIEFS CONFERENCE, INC.

I Title

Cooperative agreement between the Tanana Chiefs Conference, Inc. and the U.S. Fish and Wildlife Service providing information and technical support to the Federal subsistence program on Federal public lands authorized by the Alaska National Interest Lands Conservation Act (ANILCA).

II Authority and Purpose

This cooperative agreement between the U.S. Fish and Wildlife Service, hereinafter referred to as the "Service," and the Tanana Chiefs Conference, Inc., hereinafter referred to as the "TCC," is entered into under the authority of ANILCA, Section 809, Cooperative Agreements.

The Secretary of the Interior (Secretary) has been mandated by Title VIII of the ANILCA, 16 USC 3101, to provide for a preference for rural subsistence uses on Federal public lands in the absence of State laws of general applicability providing such a preference. As result of the Alaska Supreme Court ruling in McDowell vs. State of Alaska, the State is no longer able to provide for that preference under the Alaska Constitution. Consequently, on July 1, 1990, the Secretary assumed management for subsistence uses on all Federal public lands in Alaska.

III Background

Section 809 of ANILCA authorizes the Secretary to enter into cooperative agreements or otherwise cooperate with appropriate organizations to effectuate the purposes and policies of Title VIII.

The TCC is the regional Native non-profit corporation serving as the tribal consortium contracting agency for the 43 tribes (villages) of the TCC region. This region includes roughly the Yukon River drainage from Holy Cross upstream to the Canadian border, and the Kuskokwim River drainage north of Stony River - a little over one-third of the land mass of Alaska. The region includes a large amount of Federal public lands including the Denali National Park; the Yukon-Charley National Park and Preserve; portions of the Wrangell-St. Elias National Park, Steese National Recreation Area, and White Mountain Recreation Area; all or portions of the Arctic, Innoko, Kanuti, Koyukuk, Nowitna, Tetlin, and Yukon Flats national wildlife refuges; a large portion of the Utility Corridor; and general domain Federal lands, Native allotments, and Native townsite lands.

IV Scope of Work

To derive mutual benefits, the Service and TCC agree to cooperatively conduct a program intended to provide the Federal Subsistence Board with information that will assist in implementing a subsistence management program on Federal public lands in the TCC region.

A. Specifically, the Service will:

1. Provide funds to TCC to conduct Activities 1 and 2 as described below.

2. Establish purposes and objectives and, as appropriate, provide technical assistance and guidance.

3. Provide assistance in study design, data collection, and data analysis.

B. Specifically, TCC will:

1. Conduct Activities 1, 2, and 3 as described below. Activity 3 will be conducted at no cost to the Service.

2. Submit an activity proposal as described in Section V of this Agreement and meet all schedules and conditions contained herein.

3. Provide the Service with progress updates as requested.

C. Activities 1, 2, and 3 are described as follows:

What time period

* Activity 1. Determine subsistence uses of fish and wildlife resources by the communities of Grayling, Anvik, Holy Cross, and Shageluk.

June 15-90
June 15-91

Purposes:

ⓐ. to document the contemporary patterns of harvest and use of fish and wildlife resources by the residents of Grayling, Anvik, Holy Cross, and Shageluk;
ⓑ. to update existing maps of harvest areas used by the residents of Grayling, Anvik, Holy Cross, and Shageluk;
ⓒ. to describe the use of fish and wildlife resources on a community basis and the contribution of these resources in the community economy;
→ ⓓ. to examine fish and wildlife resource harvest data in relation to demographic, employment, and other socioeconomic characteristics of households; and
* ⓔ. to determine the extent of competition between user groups in the harvest of fish and wildlife.

Objectives:

a. to provide a detailed description of the seasonal harvest of fish and wildlife utilized by the residents of Grayling, Anvik, Holy Cross and Shageluk:
b. to estimate, for a 12-month period, quantities of fish and wildlife harvested and the level of participation by household;
c. to describe the cash sector of the economy including employment opportunities, an estimation of the cost-of-living and other economic household characteristics (such as the extent of participation in wage employment, sources of cash, and gross income), and an analysis of the relationships of these to harvest activities;
→ d. to describe resource distribution and exchange to include the kinds of fish and wildlife resources most frequently exchanged, the distribution of harvests between each of the four communities and the surrounding communities, and the extent of involvement of households in distribution networks;
e. to identify subpopulations within each of the four communities and their differing patterns of fish and wildlife resource use and socioeconomic characteristics;

Sept-91-92? which 12 months?
90-91?

thru time?
What time depth?

? f. to provide a completed Community Profile Database as maintained by the Alaska Department of Fish and Game;

So, are we to work ē Subsistence Div.?

h. to update maps of harvest areas; and

i. to describe competition with other user groups in the harvest of fish and wildlife.

Activity 2. Monitor and report the subsistence harvests of caribou in the communities of Arctic Village, Venetie, and Chalkyitsik during the 1991-1992 regulatory year.

Purposes:

a. to indicate land areas used by community caribou hunters;

b. to describe the community harvests of caribou in terms of their temporal distribution;

c. to report the total numbers of caribou harvested by community;

d. to report the sex composition of the harvests;

e. to identify the transportation methods used in accessing hunting areas;

f. to describe hunting groups involved in harvesting;

g. to indicate reasons why some households did not harvest caribou.

Objectives:

a. to produce a map showing the distribution of the 1991-1992 regulatory year harvest site locations, the month in which each caribou was taken at each harvest site, harvest numbers at each harvest site, and the sex composition of caribou harvested at each site;

b. to produce a table showing sex composition of the caribou harvest;

c. to produce a table showing chronology of the caribou harvest;

d. to provide a discussion of the 1991-1992 regulatory year harvest data in the context of other relevant economic activities;

e. to provide a discussion of the harvest locations for the 1991-1992 regulatory year in relation to the traditional hunting areas;

f. to provide a discussion of transportation methods used in accessing the 1991-1992 regulatory year hunting areas; transportation

g. to provide a discussion of hunting groups involved in harvesting caribou; hunting gr.

h. to provide a discussion of reasons given by households for not hunting caribou. why not hunt

Activity 3. Provide recommendations that would assist the Federal Subsistence Board in improving the acceptability of Federal subsistence regulations by rural residents within the TCC region.

Purposes:
a. to address concerns that Federal subsistence regulations do not take into account the cultural beliefs of subsistence users within the TCC region.
b. to address concerns that Federal subsistence regulations place unnecessary restrictions on subsistence users within the TCC region.

Objectives:
a. to identify those provisions of the Federal subsistence regulations that are perceived to be in conflict with the cultural beliefs of rural residents and to provide acceptable alternatives to those provisions; and
b. to identify those provisions of the Federal subsistence regulations that are unnecessary and the rationale for why they are unnecessary.

V Coordination

This week?

The TCC is expected to provide an activity proposal, based upon the scope of work above, to most efficiently conduct the provisions of this agreement. This activity proposal shall include methodologies, activity schedules, qualifications of personnel responsible for conducting the studies, and funding.

The Service's Subsistence Office staff shall be consulted during the study design, data collection, and data analysis phases of the agreement and shall be involved in the development of recommendations and/or conclusions.

Prior to, and during conduct of, field work described in this agreement, TCC will consult and/or coordinate with appropriate Federal land managers to ensure compliance with specific agency mandates, policies, and regulations.

VI Period of Performance

The period of performance for this agreement is from

June 25, 1991, through September 30, 1991. If funds are available, this agreement may be extended until April 30, 1991. Draft and final reports will be submitted in accordance with Section VII.

VII Reports

The following reports shall be required from TCC in order to fulfill this agreement:

Activity 1. Progress reports on September 15 and December 15, 1991, a draft final report no later than February 1, 1992, and a completed final report no later than April 1, 1992

Activity 2. A progress report on September 15, 1991, a draft final report no later than November 15, 1991, and a completed final report no later than December 15, 1991. If this agreement is extended, progress reports on September 15, 1991, and January 15, 1992, a draft final report no later than June 1, 1992, and a completed final report no later than July 1, 1992.

Activity 3. A progress report on September 15, 1991, a draft final report on November 15, 1991 and a completed final report on December 15, 1991.

VIII Responsible Officials

A. The Service project officer, identified below, is responsible for maintaining coordination with all parties to this agreement, reviewing and recommending approval of invoices submitted by the TCC, and forwarding them to the paying office for processing. The project officer is also responsible for reviewing and recommending acceptance of any and all reports and products required by this agreement.

Richard S. Pospahala
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503
(907) 786-3447

B. The TCC representative, identified below, is responsible for meeting the technical requirements of the scope of work, providing collected information and submitting invoices for payment.

Alfred R. Ketzler, Sr.
Chief Administrative Officer

Tanana Chiefs Conference
122 First Avenue
Fairbanks, Alaska 99701
(907) 452-8251

IX Financial Administration

A. Award Amount. The total amount of funding to be provided by the Service under this Agreement is not to exceed $211,000. The TCC shall not incur costs nor shall the Service be liable to reimburse the TCC in excess of the funds actually obligated under this agreement.

B. Payment. The TCC will provide quarterly billings to the U.S. Fish and Wildlife Service, Attn: Contracting and General Services, 1011 E. Tudor Road, Anchorage, Alaska 99503.

X Liability

Each party agrees that it will be responsible for its own acts and omissions and the results thereof, and shall not be responsible for the acts or omissions of the other party or the result thereof. Each party therefore agrees that it will assume all risk and liability to itself, its agents or employees, for any injury to persons or property resulting in any manner from the conduct of its own operations, and the operations of its agents or employees, under this agreement, and for any loss, cost, damage or expense resulting at any time from any and all causes due to any act or acts, negligence, or the failure to exercise proper precautions, of or by itself or its own agents or employees, while occupying or visiting the premises under and pursuant to this agreement. The Service's liability shall be governed by the provisions of the Federal Tort Claims Act (28 USC 2671-80 (1976).

XI Special Provisions

It is mutually agreed that:

1. This agreement may be modified in writing by mutual consent of the signing officials of the Service and the TCC.

2. Nothing in this agreement shall obligate any party in the expenditure of funds, or for future payments of money, in excess of appropriations authorized by law.

3. No member of Congress, or the Commissioner, shall be admitted to any share or part of the agreement or to any benefit that may arise therefrom.

4. Each party will comply with all applicable laws, regulations, and executive orders relative to Equal Employment Opportunity.

5. Nothing herein is intended to conflict with Federal, State or local laws or regulations. If there are conflicts, this agreement will be amended at the first opportunity to bring it into conformance with conflicting laws or regulations.

6. Policy and position announcements relating specifically to this cooperative program may be made only by mutual consent of the parties.

7. All signatory agencies/organizations shall meet jointly on at least an annual basis to discuss matters relating to this agreement.

8. This agreement may be terminated by either party upon written notification to the other party 60 days in advance of the proposed effective date of the termination.

9. Upon termination of this agreement, any equipment purchased for studies initiated in furtherance of this agreement will be returned to the agency of initial purchase.

10. The effective date of this agreement shall be from the date of final signature.

11. The U.S. Fish and Wildlife Service's General Provisions for Grant and Cooperative Agreements, dated August 1, 1985, are hereby incorporated by reference and shall be applicable to this agreement.

APPENDIX B. SURVEY INSTRUMENT

Village No.:________
Household No.:________

SUBSISTENCE RESOURCE USE SURVEY
TANANA CHIEFS CONFERENCE
FALL 1991

1. How many people live in this house? (This includes all family and non-family that stay here most of the time.) _______. Please write in the number of people (males first, then females) in each age group. *Be sure to include the respondent.*

	Males	Females
< 10 years	______	______
10-19 years	______	______
20-29 years	______	______
30-39 years	______	______
40-49 years	______	______
50-59 years	______	______
60-69 years	______	______
70 or older	______	______

2. How many members of your household work at wage labor jobs? ____. Please fill in the blanks for the people in your household:

2a. full time/year round ______
2b. part time/year round ______
2c. full time/seasonal ______
2d. part time/seasonal ______

3. Please estimate your **household's** yearly income (for all members, including permanent fund dividends, pensions, shareholder dividends, social security, welfare, and so on).

1. 0-10,000 ____
2. 10,001-20,000 ____
3. 20,001-30,000 ____
4. 30,001-40,000 ____
5. 40,001-50,000 ____
6. 50,001+ ____
9. NA ____

4. These questions ask about hunting, fishing, trapping and gathering by **any persons in the household**. Please fill in the blanks, showing how many people do the activity, how many share what they get with other households in this village, and how many share what they get with households in other villages.

Activities:	Number who do this	Share this village	Share other villages
Hunting			
Fishing			
Trapping			
Gathering			

Now we are going to ask you about your yearly cycle -- that is, what you hunt/trap/fish and gather in each season. We are interested in the animals, birds, fish and plants and berries that you harvested during the past year, from *Fall 1990 (one year ago) to Summer 1991.* Fill in the blanks showing how many your household barvested, and for hunting show the age and sex of the animal and if the harvest was sufficient for your needs. *Key for needs: 1. Not enough; 2. Enough; 9. NA.*

FALL TIME

5. Hunting:

Resource	How many	Age (years)	Sex (M or F)	Sufficient?
Moose				1. 2. 9.
Caribou				1. 2. 9.
Sheep				1. 2. 9.
Goat				1. 2. 9.
Brown bear				1. 2. 9.
Black bear				1. 2. 9.
Rabbit/hare				1. 2. 9.
Ducks				1. 2. 9.
Geese				1. 2. 9.
Swans				1. 2. 9.
Ptarmigan, grouse				1. 2. 9.
				1. 2. 9.
				1. 2. 9.
				1. 2. 9.

6. Trapping:

Resource	How Many
Rabbits/hares	
Fox	
Wolf	
Otter	
Beaver	
Ermine	
Lynx	
Marten	

7. Snaring:

Resource	How many
Rabbits/hares	
Fox	
Wolf	
Otter	
Beaver	
Ermine	
Lynx	
Marten	
Ptarmigan/grouse	

8. Fish:

Resource	How Many
Salmon	
Whitefish	
Sheefish	
Trout	
Grayling	
Char	

9. Gathering:

Resource	Amount
Blueberries	
Cranberries	
Salmonberries	
Greens	
Firewood	

WINTER TIME

10. Hunting:

Resource	How many	Age (years)	Sex (M or F)	Sufficient?
Moose				1. 2. 9.
Caribou				1. 2. 9.
Sheep				1. 2. 9.
Goat				1. 2. 9.
Brown bear				1. 2. 9.
Black bear				1. 2. 9.
Rabbit/hare				1. 2. 9.
Ducks				1. 2. 9.
Geese				1. 2. 9.
Swans				1. 2. 9.
Ptarmigan, grouse				1. 2. 9.
				1. 2. 9.
				1. 2. 9.
				1. 2. 9.

11. Trapping:

Resource	How Many
Rabbits/hares	
Fox	
Wolf	
Otter	
Beaver	
Ermine	
Lynx	
Marten	

12. Snaring:

Resource	How many
Rabbits/hares	
Fox	
Wolf	
Otter	
Beaver	
Ermine	
Lynx	
Marten	
Ptarmigan/grouse	

13. Fish:

Resource	How Many
Salmon	
Whitefish	
Sheefish	
Trout	
Grayling	
Char	

14. Gathering:

Resource	Amount
Blueberries	
Cranberries	
Salmonberries	
Greens	
Firewood	

SPRING TIME

15. Hunting:

Resource	How many	Age (years)	Sex (M or F)	Sufficient?
Moose				1. 2. 9.
Caribou				1. 2. 9.
Sheep				1. 2. 9.
Goat				1. 2. 9.
Brown bear				1. 2. 9.
Black bear				1. 2. 9.

Resource	How many	Age (years)	Sex (M or F)	Sufficient?
Rabbit/hare				1. 2. 9.
Ducks				1. 2. 9.
Geese				1. 2. 9.
Swans				1. 2. 9.
Ptarmigan. grouse				1. 2. 9.
				1. 2. 9.
				1. 2. 9.
				1. 2. 9.

16. Trapping:

Resource	How Many
Rabbits/hares	
Fox	
Wolf	
Otter	
Beaver	
Ermine	
Lynx	
Marten	

17. Snaring:

Resource	How many
Rabbits/hares	
Fox	
Wolf	
Otter	
Beaver	
Ermine	
Lynx	
Marten	
Ptarmigan/grouse	

18. Fish:

Resource	How Many
Salmon	
Whitefish	
Sheefish	
Trout	
Grayling	
Char	

19. Gathering:

Resource	Amount
Blueberries	
Cranberries	
Salmonberries	
Greens	
Firewood	

SUMMER TIME

20. Hunting:

Resource	How many	Age (years)	Sex (M or F)	Sufficient?
Moose				1. 2. 9.
Caribou				1. 2. 9.
Sheep				1. 2. 9.
Goat				1. 2. 9.
Brown bear				1. 2. 9.
Black bear				1. 2. 9.
Rabbit/hare				1. 2. 9.
Ducks				1. 2. 9.
Geese				1. 2. 9.
Swans				1. 2. 9.
Ptarmigan, grouse				1. 2. 9.
				1. 2. 9.
				1. 2. 9.
				1. 2. 9.

21. Trapping:

Resource	How Many
Rabbits/hares	
Fox	
Wolf	
Otter	
Beaver	
Ermine	
Lynx	
Marten	

22. Snaring:

Resource	How many
Rabbits/hares	
Fox	
Wolf	
Otter	
Beaver	
Ermine	
Lynx	
Marten	
Ptarmigan/grouse	

23. Fish:

Resource	How Many
Salmon	
Whitefish	
Sheefish	
Trout	
Grayling	
Char	

24. Gathering:

Resource	Amount
Blueberries	
Cranberries	
Salmonberries	
Greens	
Firewood	

25. We are trying to get an idea of how much it costs to hunt, fish, trap and gather over the year. Please answer the following questions by checking off the answers in the boxes, showing which equipment your **household** uses in which **seasons**, whether the equipment is owned by persons in the household or is borrowed, how much the equipment cost new, and when it was purchased (year and month if possible).

Equipment	Use: yes/no	Seasons (Fa, Wi, Sp, Su)	Own/borrow	Cost when new	Last purchase
Snowmachine	0. No 1. Yes		1. Own 2. Bor.		
Boat	0. No 1. Yes		1. Own 2. Bor.		
Kicker	0. No 1. Yes		1. Own 2. Bor.		
Rifle	0. No 1. Yes		1. Own 2. Bor.		
Traps	0. No 1. Yes		1. Own 2. Bor.		
Snares	0. No 1. Yes		1. Own 2. Bor.		
Set nets	0. No 1. Yes		1. Own 2. Bor.		
Chain saw	0. No 1. Yes		1. Own 2. Bor.		
Ammo	0. No 1. Yes		1. Own 2. Bor.		
Other	0. No 1. Yes		1. Own 2. Bor.		

26. There are other important expenses too. Please fill in the blanks with the amount of gas you bought (gallons) and expenses for other things, such as groceries, tents or sleeping bags, for each season and each activity.

	Fall		Winter		Spring		Summer	
	Gas	Other $	Gas	Other $	Gas	Other $	Gas	Other $
Hunting								
Fishing								
Trapping								
Gathering								

27. What would be the best subsistence moose hunting seasons? Please check the blanks on the calendar to show your opinion.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

28. What would be the best subsistence caribou hunting seasons? Please check the blanks on the calendar to show your opinion.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Now we would like to ask you some other questions about your opinions about hunting, fishing, trapping, and gathering.

29. In general, would you say that there are more, the same, or fewer animals and other resources present now compared with ten years ago? Please check the blanks.

Resources	More	Same	Fewer	Don't Know	NA
Land Mammals	3	2	1	8	9
Birds	3	2	1	8	9
Fish	3	2	1	8	9
Greens/berries	3	2	1	8	9
Furbearers	3	2	1	8	9

30. If any are FEWER, is this because of:

Resources	Harvests by Natives	Harvests by others	Resource has moved	Too many people	Other reason	Don't know	NA
Mammals	1	2	3	4	5	8	9
Birds	1	2	3	4	5	8	9

Resources	Harvests by Natives	Harvests by others	Resource has moved	Too many people	Other reason	Don't know	NA
Fish	1	2	3	4	5	8	9
Greens etc	1	2	3	4	5	8	9
Furbearers	1	2	3	4	5	8	9

31. Would you say that there are more, the same, or fewer of the following animals present now compared with ten years ago?

Resources	More	Same	Fewer	Don't Know	NA
Moose	3	2	1	8	9
Caribou	3	2	1	8	9
Black bear	3	2	1	8	9
Brown bear	3	2	1	8	9
Wolf	3	2	1	8	9
Sheep	3	2	1	8	9
Goat	3	2	1	8	9

32. What is the best way to keep the animals coming back?

33. What do you think about the present regulatory system?

34. If you were in charge of regulating the resources, what would you do?

35. If commercial or subsistence fishing regulations could be changed, what changes would you like to see?

36. Tanana Chiefs Conference appreciates your time in answering these important questions. The information provided by people like yourself will provide a basis for good decisions about resources. The results of this study will be made available to village residents, and all answers are confidential. Are there any additional comments that you would like to make?

APPENDIX D. COMMON, DEG HIT'AN, AND SCIENTIFIC NAMES FOR FISH AND WILDLIFE RESOURCES HARVESTED BY RESIDENTS OF GRAYLING, ANVIK, SHAGELUK AND HOLY CROSS

Common Name	Deg Hi'tan Name	Scientific Name
Fish		
King Salmon	*ggath*	Onchorynchus tshawytscha
Chum salmon	*nalay*	Onchorynchus keta
Chum salmon	*ighan*	Onchorynchus keta
Coho salmon	*legg*	Onchorynchus kisutch
Broad whitefish	*tilay*	Coregonus nasus
Humpback whitefish	*q'ontoggiy*	Coregonus pidschian
Least cisco	*legg*	Coregonus sardinella
Bering Cisco	*legg*	Coregonus laurettae
Sheefish	*sresr*	Stenodus leucichthys
Northern Pike	*srixno' legg*	Thymallus arctucus
Dolly Varden	*tritr doggizr*	Salvellinus malma
Mammals		
Moose	*g'iyh dihon*	Alces alces
Caribou	*ghinoy*	Rangifer tarandus
Black bear	*nili'ey*	Ursus americanus
Brown bear	*iliy ggagg*	Ursus arctos
Snowshoe hare	*ggux chux*	Lepus americanus
Porcupine	*srix tl'ot ggagg*	Erithizon dorsatum
Beaver	*noya'*	Castor canadensis
Muskrat	*vichingadh*	Ondotra zibethica
Marten	*gitsighiy*	Martes americana
Lynx	*nodog*	Lynx canadensis
Red fox	*niq'asrt'ay*	Vulpes vulpes
Mink	*tevoniy*	Mustela vision
Wolverine	*niltreth*	Gulo gulo
Wolf	*nik'ighun*	Canis Lupis
Land otter	*tixet'an*	Lutra Canadensis
Birds		
Canada goose	*vidhal zring*	Branta canadensis
White fronted goose	*gidot'aq*	Anser albifrons
Mallard	*viqidithiq'izr*	Anas platyrhynchos
Pintail	*gidrongedh*	Anas acuta
Green winged teal	*honhdzighudi*	Anas crecca
American wigeon	*srisriy*	Anas americana
Northern shoveler	*vitsis didividz*	Anas clypeata
Redhead	*toggagg*	Aythya americana
Ring-neck	*toggagg*	Aythya collaris
Canvasback	*toggagg*	Aythya valisineria
Bufflehead	*toggagg*	Bucephala albeola
Oldsquaw	*ihag*	Clangula hyemalis
White winged scoter	*ggaggizring*	Melanitta fusca
Sandhill Crane	*niltiy*	Grus canadensis
Ruffed grouse	*gidilning*	Bonasa umbellus
Spruce Grouse	*q'ivaldal*	Dendragapus canadensis

Sharp Tailed Grouse	*gidilning*	Tympanuchus phasianellus
Willow Ptarmigan	*q'iyaldal*	Lagopus lagopus
Rock Ptarmigan	*q'iyaldal*	Lagopus mutus
Berries/Greens/Trees		
Lowbush Cranberry	*nenhtl'it*	Vaccinium vitisidaea
Highbush cranberry	*tr'onihay*	Vibernum edule
Raspberry	*dondiggiy*	Rubus idaeus
Blueberry	*nilyagh*	Vaccinium sp.
Red current	*nondiney*	Ribes triste
Crowberry	*nilanht'asr*	Empetrum nigrum
Salmonberry	*dondhi'on*	Rubus chamaemorus
Rosehips	*xisrghed*	Rosa acicularis
Wild rhubarb	*xoltthil*	Polygonum Alaskanum
Labrador tea	*giliq'uyh*	Ledum palustre
Dandelion greens	*git'on'yeg*	---
Fireweed	*trilqaquth*	Epilobium angustifolium
Mushroom spruce	*didlang*	---
White spruce	*didlang*	Picea glauca
Black spruce	*didlang*	Picea mriana
Birch spruce	*didlang*	Betula sp.
Quaking aspen	*t'ighith tthadl*	Populus tremuloides
Balsam poplar	*t'ighith*	Populus balsamifera
Alder	*q'isr*	Alnus sp.
Willow	*tr'itl*	Salix sp.
Tamarack	*tot'ighiddh*	Larix larcina

APPENDIX E. FREQUENCY AND YEAR OF PURCHASE OF SNOWMACHINES, BOATS, AND OUTBOARDS FOR SAMPLED HOUSEHOLDS

Item of Equipment	Year of Purchase	Number of Households
Snowmachine	1978	1
Snowmachine	1979	0
Snowmachine	1980	3
Snowmachine	1981	0
Snowmachine	1982	0
Snowmachine	1983	0
Snowmachine	1984	1
Snowmachine	1985	7
Snowmachine	1986	4
Snowmachine	1987	16
Snowmachine	1988	15
Snowmachine	1989	28
Snowmachine	1990	21
Snowmachine	1991	6
	Total	102
Boat	1970	4
Boat	1971	1
Boat	1974	1
Boat	1978	1
Boat	1979	3
Boat	1980	7
Boat	1982	3
Boat	1983	2
Boat	1984	2
Boat	1985	11
Boat	1986	6
Boat	1987	3
Boat	1988	12
Boat	1989	12
Boat	1990	7
Boat	1991	7
	Total	82
Kicker	1974	1
Kicker	1980	4
Kicker	1982	1
Kicker	1984	3
Kicker	1985	9
Kicker	1986	8
Kicker	1987	6
Kicker	1988	14
Kicker	1989	17
Kicker	1990	10
Kicker	1991	10
	Total	83

APPENDIX F. FREQUENCY AND YEARS OF PURCHASE FOR RIFLES, TRAPS, SNARES, SET NETS, AND CHAIN SAWS FOR SAMPLED HOUSEHOLDS

Equipment	Year Purchased	Number of Households
Rifle	1950	2
Rifle	1955	1
Rifle	1968	2
Rifle	1969	1
Rifle	1970	5
Rifle	1971	1
Rifle	1972	1
Rifle	1975	3
Rifle	1976	1
Rifle	1977	1
Rifle	1978	2
Rifle	1979	3
Rifle	1980	7
Rifle	1981	3
Rifle	1982	1
Rifle	1984	2
Rifle	1985	9
Rifle	1986	5
Rifle	1987	5
Rifle	1988	12
Rifle	1989	14
Rifle	1990	8
Rifle	1991	5
	Total	94
Traps	1955	2
Traps	1960	1
Traps	1970	6
Traps	1973	1
Traps	1975	2
Traps	1978	2
Traps	1979	2
Traps	1980	8
Traps	1981	1
Traps	1983	3
Traps	1984	3
Traps	1985	6
Traps	1986	4
Traps	1987	2
Traps	1988	6
Traps	1989	5
Traps	1990	10
	Total	64

Equipment	Year Purchased	Number of households
Snares	1965	1
Snares	1970	1
Snares	1973	1
Snares	1975	1
Snares	1979	1
Snares	1980	1
Snares	1983	1
Snares	1985	1
Snares	1986	3
Snares	1987	1
Snares	1988	3
Snares	1989	12
Snares	1990	22
Snares	1991	1
	Total	50
Set Net	1980	1
Set Net	1985	3
Set Net	1986	4
Set Net	1987	8
Set Net	1988	13
Set Net	1989	16
Set Net	1990	19
Set Net	1991	8
	Total	72
Chain Saw	1980	1
Chain Saw	1984	2
Chain Saw	1985	2
Chain Saw	1986	4
Chain Saw	1987	4
Chain Saw	1988	11
Chain Saw	1989	26
Chain Saw	1990	37
Chain Saw	1991	12
	Total	99

APPENDIX G. CONVERSION FACTORS UTILIZED IN THIS STUDY

Resource	Conversion Factor	Source
Hunted::		
Moose	780	Galena
Caribou	130	Upper Koyukuk
Sheep	65	Upper Koyukuk
Goat	72.5	Nenana
Brown Bear	141	Upper Koyukuk
Black Bear	58	Upper Koyukuk
Rabbit/Hare	2.0	Galena
Ducks	1.10	Galena
Geese	6.0	Galena
Swans	5.0	Upper Koyukuk
Ptarmigan/Grouse	.70	Galena
Trapped:		
Rabbits	2.0	Galena
Fox		
Wolf		
Land Otter		
Beaver	30	Galena
Ermine		
Lynx		
Marten		
Fished:		
Chinook Salmon	13.8	Galena
Summer Chum	4.6	Galena
Fall Chum	5.6	Galena
Silver	5.0	Tanana
Whitefish	3.0	Galena
Sheefish	7.5	Galena
Trout	1.5	Galena
Grayling	.70	Galena
Char	3.4	Galena
Gathered:		
Blueberries	4.0	Galena
Cranberries	4.0	Galena
Salmonberries	4.0	Galena
Greens	4.0	
Firewood	cord -- n/a	